The RUBBER AGE

Published TWICE-A-MONTH at New York

Vol. 21 JUNE 10, 1927 No. 5

R. T. VANDERBILT CO.

INCORPORATED

50 East 42nd Street, New York

We have the pleasure to announce the completion of arrangements with the

SIMPLEX WIRE & CABLE COMPANY

whereby we now have the exclusive sale of the

Selenium Products and Compounds

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Boggs	1,364,055
Murrill	1,622,534
Murrill	1,622,535
Murrill	1,622,536

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Entered as Second Class Matter, June 10, 1920 at the Post Office at Highland, N. Y., under Act of March 3, 1879.

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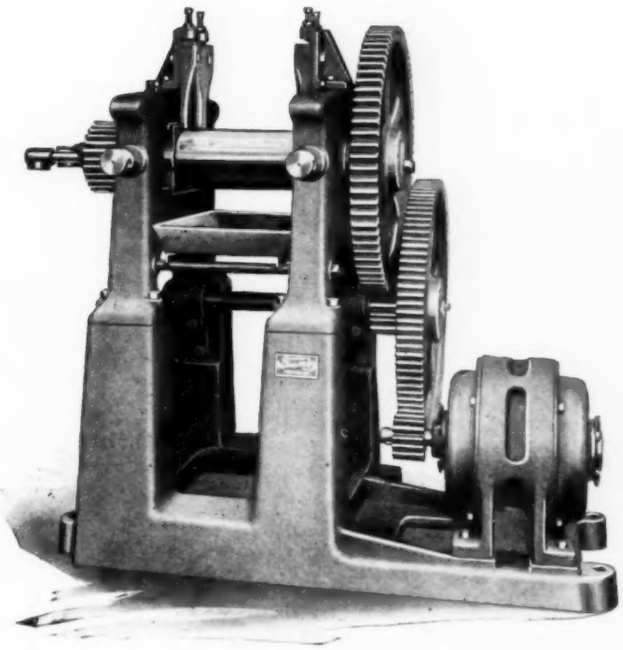

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We also design and build special and standard equipment for every rubber product from the smallest to the largest.

Your inquiries are requested

The Adamson Machine Co.

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SPECIAL
ZINC OXIDE

A Carefully Graded Zinc Oxide of Uniformly Low Lead Content — Designed Especially for the Production of White Rubber Goods.

Extensively Employed in the Manufacture of
White Rubber Footwear
Druggists' Sundries

One of a series of advertisements describing the specific uses of each of the EIGHT Brands of Zinc Oxide supplied to the rubber industry

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The New Jersey Zinc Company
Established 1848
Products Distributed by
The New Jersey Zinc Sales Company
160 Front Street, New York City
CHICAGO · PITTSBURGH · CLEVELAND · SAN FRANCISCO

The
RUBBER AGE

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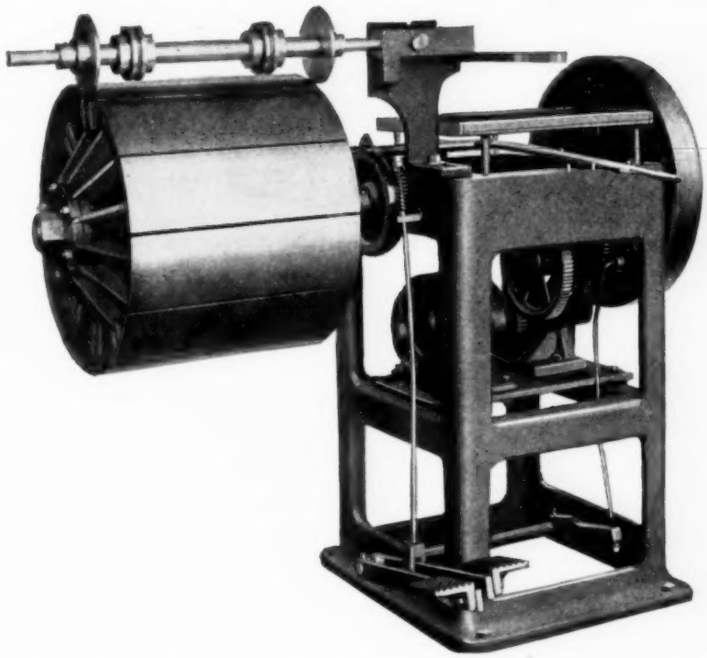
Flat Drum Building Machine



THE SPEED YOU WANT BY FRICTION DRIVE

IN this improved Flat Drum Building Machine any desired drum speed up to 150 R. P. M. is at the disposal of the operator by means of the friction driving feature, controlled through convenient foot pedal. A quick acting foot operated braking device is also provided.

This machine is constructed for use with solid drum, single segment collapsing drum, or complete collapsing drum. All three drum types are manufactured by Akron Standard.

With the complete collapsing drum, shown above, bead diameters can be changed to the extent of one inch. This makes one drum adaptable for tires within one inch variation.

When the tire is built the "quick change" lever collapses the drum in just a fraction of a second, to let tire off. The drum may then be readjusted instantly to the desired diameter for the next tire.

The Machine is equipped with a 3/4 H. P. motor and tool tray and in every detail is constructed to effect greatest efficiency in operation.

Prices on Application.

The Akron Standard Mold Co.

Akron "The Established Measure of Value" Ohio

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NEW YORK
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for the
Rubber Goods
Manufacturer

THE merit of any established product is well gauged by the loss or gain in sales. The following established materials show a constantly increased volume of sales.

VGB—antioxidant.
MONEX—ultra accelerator—universal application.
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RUBBER LABELS—for tires, tubes, hose, belting, etc.
ZBX—accelerator for very low temperature curing—cements, etc.

ANNOUNCEMENT

We believe the rubber goods manufacturers may be interested in knowing something of the work our research staff is doing in their behalf. Your patronage makes possible these developments.

In the very near future we expect to offer you the following:

A new accelerator for low temperature curing that can be as easily handled in your factory as DPG.

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1790 BROADWAY
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The
RUBBER AGE
The Only Twice-a-Month Rubber Publication

Vol. 21 NEW YORK, JUNE 10, 1927 No. 5

REDUCE COMMISSION RATES ON EXCHANGE

Rubber Exchange Members Approve Several Important Changes in the By-Laws and Rules Designed to Increase Trading Activity.

Members of the Rubber Exchange of New York approved on May 23 a number of important changes in the by-laws and rules designed to increase the activities of the Exchange and enlarge its usefulness to the rubber industry. The proposed changes were referred to the Rules Committee for drafting into form for submission to the Board of Governors and later for ratification by the members.

F. R. Henderson, president of the Rubber Exchange, issued the following statement explaining the proposed changes:

"The membership seemed unanimous in the opinion that deliveries should be made from warehouses when buyers so desire. The proposed change would give the sellers the privilege of delivering from the dock if buyer agrees. With rubber deliveries from the warehouse, certificate of quality is to be issued by graders licensed by the Exchange. It was also the unanimous opinion that qualities should be so graded as to conform with those established in the outside market, with a view to establishing international types.

"The membership voted that the unit of trading be increased from the present 2½ tons to a 5-ton contract, and that prices for trading be on the basis of 5 points (1/20 of a cent) rather than the prevailing basis of 10 points.

"A revision of the commission rate was also voted for, and a sliding scale adopted on a one way basis, representing a reduction from the old average rate of approximately 40%.

"The members favored increasing the clearance charge from $1.50 to $2.00, though the contract was doubled in unit of trade. The clearance charge was also recommended at $10.00 per contract for members, to cover transactions in and out during trading hours, even though absent from the floor.

"There were various other matters of lesser importance discussed, and generally speaking, the membership approved the recommendations of the board. The purpose of the meeting was to bring about a fuller discussion before definite by-laws and rules were drawn up. While every effort is being made to increase activity, the primary object of the board is to facilitate deliveries and to encourage hedging on the part of consumer, producer and trader, keeping in mind always its responsibility to the rubber industry as a whole."

New Goodrich Advertising Manager

GATES FERGUSON

The office of manager of national advertising of the B. F. Goodrich Co., Akron, which has been vacant for some time, was filled recently by the appointment of Gates Ferguson who was formerly advertising manager of the Blanchard Press, Inc., publishers of "The Spur," "Town and Country," "The New Yorker," and other publications. For three years Mr. Ferguson was executive manager of Printed Salesmanship, Inc., New York, and for two years copy chief of the Craddick Advertising Agency, Minn. For twelve years he was associated with Baker & Co., of New York and Minneapolis as advertising manager.

Mr. Ferguson is a past-president of the Advertising Club of Minneapolis, and for two years served as vice-president of the Inter-National Advertising Association.

MAIL ORDER HOUSES START TIRE PRICE CUT

Reduction by Sears-Roebuck Expected to Mean Revision of Manufacturers' Prices on Second Line Tires—Mail Order Tire Sales Are Source of Worry to Dealers.

Instead of a tire price increase, which appeared imminent a few weeks ago, the tire industry has since June 1 been facing the prospect of a downward revision of some of its prices to meet mail-order house competition. Sears-Roebuck & Company, one of the two leading mail-order houses of Chicago which are doing a large business in tires, has cut its prices from 5 to 7 per cent in order to bring them in line with those of its principal competitor, Montgomery Ward & Company. The latter house has been doing a larger tire business than Sears-Roebuck, and the price revision is taken to represent an effort to make the sales totals more nearly even.

The tire sales of mail order houses have been increasing rapidly during the last few years. Exact sales figures have not been made public but it is known that two or three years ago one of them had annual tire sales of around $28,000,000. Since that time tire sales by mail have shown a tendency to increase, and the present size of the business is leading the tire manufacturers to watch the business closely. Tire dealers have protested vigorously against the action of certain tire manufacturers in selling tires to the mail order houses which of course compete with the retail dealers. Sales of the mail order houses are largest in the Middle West.

If tire manufacturers reduce their prices as a result of the cut made by the mail order houses, it is probable that only second line tires will be affected and perhaps only certain sizes. It is not thought that the reduction will be widely advertised but will be solely for the purpose of helping the regular tire dealers meet the mail order competition. The tires sold by the mail order houses correspond generally to the second lines offered by the manufacturers and it is unlikely that such competition would affect the prices of first line tires in any way.

ESTIMATE MAY RUBBER IMPORTS 36,000 TONS

Official April Imports Total 46,202 Tons—Highest Record in Years—Imports for 1927 Estimated at 398,639 Tons and Consumption at 393,795 Tons.

Official figures from the Department of Commerce relative to rubber imports during May have not been released, but it is generally estimated that imports totaled between 34,000 and 36,000 tons. While the latter estimate is somewhat larger than the total imports in March of this year, it represents a drop of about 10,000 tons from the official import figures of April. Shipments from the East during May, according to cable advices, totaled 31,993 tons, but this figure is somewhat lower than the total amount of rubber invoiced to the United States in the four weeks of May, a total of 32,067 tons. This figure, however, includes rubber invoiced from London and Liverpool. May arrivals at New York are said to have totaled 34,748 tons, and with prospects of about 1,500 tons reaching outports, the estimate of 36,000 tons imported into the country in May seems reasonably accurate. Rubber consumption estimates during May are varying from 33,000 tons to 36,000 tons.

April Arrivals Set Record

The April arrivals of crude rubber into the United States, totaling 46,202 tons, is a record figure which has not been exceeded in the past two years. The nearest approach to this total was achieved in January, 1926, when crude rubber imports amounted to 42,404 tons. It has been officially announced that the exports of rubber from the restricted areas of Malaya during April amounted to 16,959 tons, and the exportable allowance for that period amounting to 19,474 tons. It was also officially estimated that the carryover of unused export credits into May would amount to 13,591 tons.

Stocks of crude rubber in London decreased in the first three weeks of May, with a slight increase in the fourth week of 386 tons. London stocks on May 28 were 67,054 tons. Throughout April London stocks were continually rising, in comparison to the gradual decline of stocks in May.

A perusal of statistics covering crude rubber imports in the United States during the past year and a half, reveal a wide variance of imports from month to month. This variance in total monthly imports runs from 5,000 to 10,000 tons with no regular decline or increase. The lowest imports were reached in June, 1926, when 24,900 tons arrived in the country, and the highest was in April of the current year, as was mentioned above, namely 46,202 tons. Consumption of crude rubber during this period of a year and a half has kept fairly even pace with imports, except in April of this year when imports were in excess of 10,000 tons over consumption.

Using actual figures, so far as they are available, it has been estimated that the United States will consume 393,795 tons of rubber in 1927, the greatest amount in past history.

Continental Sales Manager

J. H. Linxweiler

J. H. Linxweiler, formerly with the Norwalk Tire & Rubber Co., Norwalk, Conn., is now associated, as sales manager, with the Continental Rubber Co. of New York, at their new offices, 1775 Broadway, New York City. Continental is the principal distributor of guayule rubber.

GOODYEAR WILL OFFER PREFERRED EXCHANGE

Holders of Goodyear Tire & Rubber Co., 7% cumulative preferred stock, on which there is now an accumulation of $25 a share, will be offered the opportunity to exchange their holdings for a new preferred stock in the ratio of 1¼ shares of new no par $7 preferred, for each share of the present preferred held. This plan, proposed by the board of directors, will await the approval of stockholders who will meet in Akron on July 11. At this meeting stockholders will also be asked to consider and approve the following:

The issue of $60,000,000 first mortgage 5% collateral bonds; the retirement of the existing three 8% securities (first mortgage bonds, debentures and prior preference stock), and issuance by the company of a new class of preferred stock without par value at an authorized amount of 1,000,000 shares, bearing dividends at the rate of $7 annually, and redeemable at $110. This new preferred will rank ahead of the existing preferred, and will have one vote per share in the event of default. Stockholders will also elect a new board of directors at the meeting to be held July 11.

ALL MODERN BUILDINGS FOR LA CROSSE RUBBER

With the completion of the new factory for the La Crosse Rubber Mills Co., La Crosse, Wis., the program for which was announced in the last issue of THE RUBBER AGE, the only remaining portion of the original structure of the rubber mills will be torn down and the company will be housed entirely in modern buildings. When the new building is finished the rubber mills plant will have a total floor space of 435,000 square feet. The firm is now employing 1,400 men and turns out 30,000 pairs of rubber footwear per day which will be raised to 40,000 pairs.

Chief among the sections of the new addition, co-ordinated one with another in the general scheme of expansion, will be the mill room, 443 by 65 feet. The entire construction will be of concrete, brick and steel, with gypsum roof deck. New machinery will be installed throughout the new building.

The construction is under the supervision of the Holm Page Co., Rockford, Ill., which has erected the other buildings of the company. This company first designed and built an addition to the La Crosse mills in 1913, constructing other large additions for the firm in 1921 and 1923. A large increase in business during the past two years now makes a further increase in facilities necessary.

The increase in sales for 1926 was over a million dollars, but the most remarkable record has been made during the first quarter of this year when sales exceeded those of the corresponding period of 1926 by a million dollars. Albert P. Funk is president of the firm, Arthur S. Funk is secretary and general manager, William Funk is vice-president, and H. J. Putnam is general sales manager.

New Tire Duty Aids Dunlop

The plant capacity of the Dunlop Rubber Co., of England is being increased 18%, mainly in the installation of larger mixers and other equipment. This growth in the demand for Dunlop products is in some measure due to the new English import duty of 33⅓% on foreign tires, according to a statement made to Dow, Jones & Co., by Sir John George Beharrell, a director of the Dunlop company. "Dunlop business so far this year exceeds all previous records," Sir George said.

Aniline Branch Will Move

The New England branch of the National Aniline & Chemical Company, New York, will shortly move to a brick building containing 12,000 square feet at Lewis Wharf, Boston. The National Aniline company has taken a long term lease on the building which will be remodeled to serve the needs of the New England branch. Lewis Wharf is on the belt line railroad which handles freight around the waterfront of Boston.

Pan-American Delegates Visit Rubber Factories

Akron rubber companies were hosts recently to fifty Latin-American engineers and business men who visited the Rubber City after the close of the Pan-American Congress in Washington. The view to the left shows Harvey Firestone with the delegates who inspected his factories. At the right are seen the visitors to the plant of the Goodyear Tire and Rubber Company.

STOCK CHANGES MADE BY CANADIAN GOODRICH

The Canadian Goodrich Co., of Kitchener, Ontario, has completed major steps effecting a change in its capital structure, which it is hoped will place its shareholders in a more favorable position. The new arrangements involve the waiver by holders of preferred stock, of $63,000 in accumulated dividends; and the exchange of the preferred stock on a share for share basis for no par common stock, of which 100,000 shares were authorized. Holders of common shares approved, also, the cancellation of the present common stock and its exchange for shares of the new no-par stock on a basis of twenty shares of the old common stock for one share of the new no par stock.

The Canadian Goodrich Co., was formerly the Ames Holden Tire & Rubber Co. In 1925, however, the B. F. Goodrich Co., of Akron, acquired a large interest in the common stock and the name was changed.

Fisk Changes Fiscal Year

The directors of the Fisk Rubber Co., have voted to change the fiscal year from October 31 to the calendar year. Consequently this year no statement of operations for the six months' period ended April 30 will be issued. However, the company will issue a statement for the eight months ending June 30 and at the same time will furnish results for the second quarter of the new fiscal year. These figures should be available in the latter part of July. The daily output of the Chicopee and Cudahy plants of Fisk has totaled for some time over 25,000 tires.

Advocates Rubber Farms

F. G. Galang, Philippine rubber expert, has returned to Manila from an extended visit to Eastern rubber producing areas with the recommendation that the cultivation of rubber by farmers of small holdings in the Philippines be encouraged. Rubber growing on small farms, he says, would greatly help in the development of a large rubber industry in the Islands and would promote greater stability in the production of the commodity.

COLORED SIDEWALLS ON TIRES INTEREST AKRON

Following the lead of the Auburn Rubber Co., Auburn, Ind., Akron tire companies are reported to be interesting themselves in the production of tires with sidewalls colored to match the paint of the automobiles on which they are to be used. The Auburn sales department has announced that the idea has caught on even better than they had hoped.

P. W. Litchfield, President of the Goodyear Tire and Rubber Co., is said to have produced a set of green tires in the Goodyear factory to match a recently-acquired Packard. The idea has been taken up by other plants and is under careful scrutiny with a view to adoption on a large scale. A fertile market is said to have been found for the tires in connection with repaint jobs and the preparation of used cars for resale.

Gasoline Demand Jumps

Domestic consumption of gasoline during April, according to the Bureau of Mines, totaled 23,371,000 barrels, representing an increase of 907,000 barrels over March consumption. Compared with consumption in April, 1926, which totaled 20,848,000 barrels, gasoline demand in April of this year represents an increase of 2,523,000 barrels. April consumption figures have not been exceeded since October, 1926. Total January to April consumption during the current year was 81,963,000 barrels, as compared with 73,546,000 barrels in the corresponding period last year.

ASSUMES OWNERSHIP OF LAMBERT RUBBER FIRM

The Lambert Tire & Rubber Co., of Akron, which was formerly an Arizona corporation, although its principal factory and offices were located in Akron, has been re-incorporated in the state of Ohio under the new ownership of George Seiberling and J. P. Seiberling, a cousin and a son, respectively, of F. A. Seiberling, president of the Seiberling Rubber Co., of Akron. The old Lambert company was taken over by the new owners under a management contract for a period of three years, at the end of which a 99-year lease may be obtained.

George Seiberling has been made president and general manager of the new organization and J. P. Seiberling is secretary and treasurer. J. W. Coyle, who was connected with the old organization, will be associated with the new owners as vice-president in charge of sales. G. M. Collette, who was formerly general manager of the Lambert company, has resigned and moved to Dayton, O.

The Lambert Tire & Rubber Co., was founded in 1913 to manufacture and sell the Lambert "Trublpruf" tire. The company built up its business until it reached nearly $2,000,000 a year. It weathered the disastrous year of 1920 when many of the larger companies were in distress. George Seiberling was formerly general factory manager of the U. S. Rubber Co., and J. P. Seiberling was connected with the law firm of Slabaugh, Seiberling, Huber and Guinther.

Mason Manager Returns

C. H. Williams, vice-president and sales manager of the Mason Tire & Rubber Co., of Kent, O., returned recently from an extended business trip in the West, where he made a survey of business conditions on the Pacific Coast. Several new men were added to the Mason Rubber Co.'s organization on the Coast during Mr. Williams' visit.

FARREL VETERANS MEET AT ANNUAL BANQUET

The Farrel Plant at Ansonia, Conn.

The annual meeting and banquet of the Veterans Association of the Farrel Foundry & Machine Company, Ansonia, Conn., was held in the Masonic Temple at Ansonia the afternoon of May 14th. The Veterans Association consists of employes who have been with the Farrel concern for twenty-five years or more.

The veterans look forward with a great deal of pleasure each year to the annual meeting and banquet as it affords a fine opportunity to get together and discuss old times. Among the members of the Association are many who have long since been pensioned, having served the Farrel concern faithfully for many years.

The Farrel Foundry & Machine Company is a very old concern, having been established in 1848, more than three-quarters of a century ago, by Almon Farrel and his son, Franklin Farrel. They first manufactured power drives and gears for installations which, at that time, ran by water power. Gradually they started the manufacture of rolling mills, calenders and other roll operating mechanisms, rubber machinery and sugar milling machinery, until today the Farrel concern serves five basic industries, by the manufacture of metal rolling mills, rubber mill machinery, paper calenders, sugar mill machinery and plastic material machinery, and has expanded from a small plant on the banks of the Naugatuck River to 13½ acres of modern plant space at Ansonia, with a branch plant at Buffalo, N. Y., which has three-quarters of the main plant's capacity.

It is interesting to note that at the time the Farrel Foundry started to build machines with rolls it was necessary to import chilled iron rolls from Great Britain, but this situation was reversed before the death of Franklin Farrel and the Farrel concern was manufacturing and shipping chilled iron rolls to all parts of the world. Today Farrel machinery as well as Farrel rolls are in use all over the world.

The members of the Veterans Association have seen many changes during the time they have spent with the Farrel Foundry & Machine Company. There are 116 members of the Association, all having been in the employ of the concern for more than twenty-five years. Thirty of these members are on the pension list. The president of the Association, William Bowen, has been in the employ of the Farrel Foundry & Machine Company for fifty-five years, while one other member has served for over fifty years and several for more than forty years.

Charles F. Bliss, president of the Farrel Foundry & Machine Co., acted as toastmaster at the banquet and gave a very interesting talk to the members of the Association.

Mohawk Moves Branch

The Los Angeles branch of the Mohawk Rubber Company has been moved to new and larger quarters at the corner of Enterprise and Santa Fe Aves. The new location gives the branch 13,000 square feet of storage space which will permit the stocking of several additional carloads of merchandise. Ample room for the parking of customers' cars will also be available.

Goodrich Uses Water Cure

The B. F. Goodrich Company has announced to its dealers that the company has adopted the water cure process in the manufacture of its Silvertown cord tires. It is claimed that with water curing the problem of even distribution of heat all through a tire during vulcanization has been overcome. Heat is said to penetrate steel 200 times faster than it penetrates rubber which is responsible for the danger of overcuring or undercuring particular parts of a tire when heat is applied from only one side.

The Seiberling Rubber Company has also announced the adoption of the water cure process.

Firestone Tires on Racer

The Duesenberg automobile driven by George Souders which won the 500-mile International race at Indianapolis on May 30 was equipped with Firestone tires and tubes mounted on wire wheels. The winning car made an average of 97.54 miles an hour. In similar races, held in the past few years, winning cars were equipped with Firestone tires and tubes.

SPECIFICATIONS BOARD REVISES TIRES, TUBES

A third revision of the Federal specifications for pneumatic tires, inner tubes and solid tires was promulgated by the Federal Specifications Board on April 25. This last revision was made to meet the increasing demand for pneumatic truck tires and balloon tires. As a result of cooperative work between the rubber products committee of the Board and the Rubber Association of America the specification now provides detailed requirements, including an endurance test, for all size of high-pressure and balloon casings. Government purchases of tires and tubes, which amount to about $1,500,000 per year, are made on the basis of tests conducted at the Bureau of Standards.

The first Federal specifications for tires and tubes were printed on October 27, 1921. A revision of these specifications prepared in cooperation with the Rubber Association, was officially promulgated by the Federal Specifications Board on February 3, 1922. Since that time another revision was made before the one just announced.

9,755 EMPLOYEES OF U. S. RUBBER INSURED

The employees of the U. S. Rubber Co., are responding favorably to the company's plan to provide life insurance to its employees on a contributory basis. On May 1 of this year 9,755 men were insured for an aggregate of $17,019,000 representing an increase of 1,165 men taking out insurance since a year ago. The Equitable Insurance Co., in May, 1926 began writing out this group insurance, and on the first call 8,590 U. S. Rubber employees responded. The total of the policies, the amount in each case being based on the salary of the insured, was $14,213,000. Not only has the number of employees covered by the plan increased, but there has been a per capita increase in coverage as well. In May of last year the average was $1,655, while now it is $1,745. Of the employees eligible for insurance, 91.6% have taken advantage of the plan and are covered.

Plantation Shares Active

The continued interest of the British public in rubber plantation investments has been consistently revealed by the recent flotation of new issues of shares and debentures in rubber planting concerns. For instance, the lists for the issue of £180,000 (about $900,000) 7% First Mortgage Convertible Debentures by the Kuala Muda Rubber Estates, Ltd., were closed five minutes after opening. The issue was heavily over-subscribed in spite of the fact that the convertible feature of the debentures is not highly attractive unless the shares in the company go to a very high price.

VANDERBILT CO. GETS RIGHTS TO SELENIUM

Simplex Wire & Cable Company Turn Over Sales Rights on Selenium and Selenium Compounds—Patents Held by Boggs and Murrill—Use in Insulated Wire Withheld.

The R. T. Vanderbilt Co., Inc., N. Y. City, announced on June 1 that they had obtained the exclusive sales rights for the rubber industry to the selenium products and compounds held by the Simplex Wire & Cable Company under Boggs' U. S. patents 1,249,272 and 1,364,055. Three patents, U. S. Nos. 1,622,534, 1,622,535 and 1,622,536 granted to Dr. P. I. Murrill had previously been assigned to the Vanderbilt company. Under the terms of the agreement made with Simplex, the latter company reserves the exclusive right to use selenium in rubber covered insulated wire.

Selenium is one of the elements and is usually combined with other metals in ores. Its atomic weight is 79.2 and the specific gravity of its various forms ranges from 4.26 to 4.80. It melts at 422°F. It belongs to the same Periodic Group as sulphur and is very similar to sulphur in its chemical properties. Used in rubber, it makes a vulcanized product resembling rubber cured with sulphur.

New Combinations Formed

From chemical analysis and physical data it appears as if selenium products form entirely new combinations with the rubber molecule.

The name chosen to designate selenium compounds is "Vandex", the name under which they will be marketed in the rubber industry. According to the Vanderbilt company, Vandex, used with sulphur and an organic accelerator, greatly increases abrasive resistance, increases stiffness or rigidity increases hardness, increases the tensile strength slightly and shortens the time of cure.

Vandex is a fine dry dark colored powder, which packs very closely. It is not affected by moisture or climatic temperatures and does not deteriorate with age. It does not stain other materials with which it comes in contact. Its specific gravity is about 4.3. It is not poisonous nor harmful to the human body.

One percent of Vandex calculated on the rubber content of a compound is sufficient to produce much higher modulus and greatly improved abrasion resistance. The sulphur or accelerator or both may be slightly reduced if desired to offset the increased cure from Vandex. It works well with commercial organic accelerators and also with litharge. Stocks containing Vandex, when properly cured, age as well as similar ones without the selenium compound. For very best aging qualities, a small amount of anti-oxidant should also be used.

Vandex is similar to sulphur with respect to bloom. If about 1.5% on the rubber is used, a bloom will appear which has a characteristic greenish yellow color. However, it is easy to produce non-blooming stocks when proper amounts of Vandex and surphur are used.

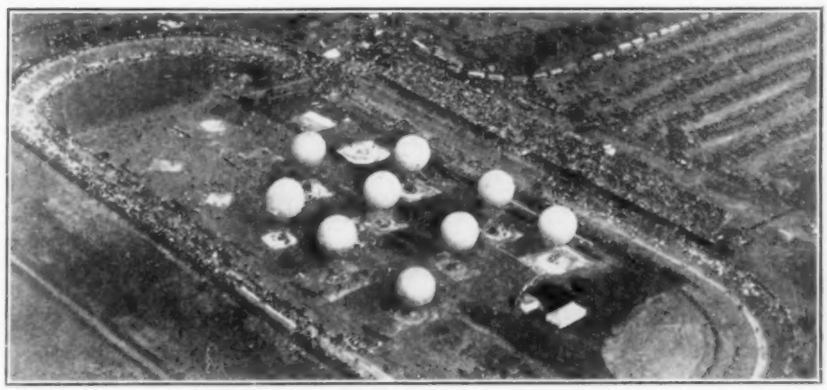
The selenium compound may be weighed and handled exactly like sulphur. Since it mixes readily, it may be added to the batch at any time during the mixing operation, but preferably as one of the first ingredients in order to insure thorough mixture. Stocks containing Vandex, sulphur, and organic accelerators, are no more scorchy than similar stocks without the selenium. Vandex reduces the tendency of sulphur to bloom in the raw. This is due to the fact that it increases the solubility of sulphur in unvulcanized rubber.

Vandex can be used satisfactorily at all curing temperatures. The time required to reach maximum physical properties is less than with sulphur alone.

The most important property imparted by the selenium compound to a cured rubber stock is a remarkable toughening. When used with reenforcing pigments, organic accelerator and relatively low sulphur, it produces high modulus, increased hardness, and high resistance to abrasion. The increase in abrasion resistance is far beyond anything that can be obtained from harder cures with sulphur and accelerator alone. The advantage therefore is either to improve the quality of high grade compounds, at small increased cost, or to maintain the present quality by the use of lower priced stocks containing more reclaim and Vandex, and less crude rubber.

Where larger amounts of Vandex are used, that is about 8% on the rubber content, the sulphur should be reduced to 1% on the rubber. Such stocks have the property of being flame proof for use under some conditions.

GOODYEAR BALLOON IS NATIONAL RACE VICTOR



Scene at the Speedway near Akron as the Goodyear Balloon Started on Its Victorious Flight

The Goodyear Tire & Rubber Co.'s balloon, piloted by Ward T. Van Orman, was the winner in the National Balloon Race held from Akron on May 30. The Goodyear entry covered 715 miles, landing near Bar Harbor, Maine. Ward T. Van Orman, the pilot, is the winner of three other races held in 1924, 1925 and 1926. By winning the 1927 elimination race, the P. W. Litchfield trophy is brought permanently to Akron, Van Orman having won the cup in the last two national races as a representative of Akron. Aiding him on his flight was W. W. Morton, a well-known parachute jumper.

Second place in the balloon race was given to the balloon of the Detroit Flying Club, No. 3 which flew a distance of 665 miles, and third place to the U. S. Army entry, No. 3 which covered 610 miles.

While the Litchfield trophy has come into the permanent possession of the Akron chapter of the National Aeronautic Association, it has been reported that the Akron chapter will keep the cup in competition in future premier balloon contests. The names of Van Orman and Morton will be engraved on the trophy, which will still be known as the Litchfield trophy.

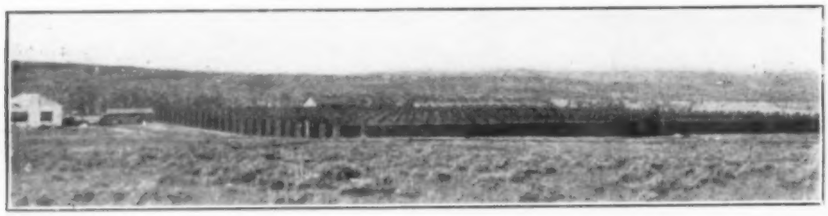
Rubber Heel Output Down

The production of rubber heels in March of this year was at a lower rate than in March, 1926. During March this year production of the manufacturers reporting to the Rubber Association amounted to 13,640,000 pairs as compared to 17,635,000 pairs in the corresponding month last year. The month's shipments this year to shoe manufacturers were 7,906,000 pairs, and to the repair trade, 6,367,000. Stocks at the end of March were 47,822,000 pairs.

Increase Ford Tire Orders

According to Akron dispatches, the Ford Motor Company of Detroit has considerably increased its tire orders in preparation for the new model Ford which will be introduced within the next few weeks. A slight rearrangement of supply of tires for the Fords is also reported.

HUBER OPENS WYOMING CARBON BLACK PLANT



New Huber Carbon Black Plant at Lance Creek, Wyoming

THE J. M. HUBER COMPANY has announced the recent completion of a new carbon black plant at Lance Creek, Wyoming. It is located several miles from the C. & N. W. Railroad and equally distant from the shipping points of Manville and Lusk where the company has built large warehouses.

The new plant is a model of its kind, being equipped with all the latest improvements and control devices developed by the company from its experience at other plants in West Virginia, Louisiana, and Texas. It is said to be the largest single unit plant ever constructed. The burning houses alone cover 3½ acres and include over 13 miles of burning channel. The refining process includes the centrifugal system of air-flotation unique with Huber.

Commodity freight rates have been established from both Manville and Lusk, Wyoming, to all principal eastern consuming points on a parity with rates in effect from the Breckenridge, Texas, field which in turn are 10c per cwt. higher than the rates from the Monroe, Louisiana, field.

The new Wyoming plant is the eight complete carbon black factory constructed by Huber. With the addition of production the company takes rank as one of the largest carbon black producers in the world. It is one of the few firms in the industry which controls plant construction, production, and marketing entirely within its own organization. Most of its output is taken by the rubber industry. The company also owns a clay mine and refining mill at Warrenville, South Carolina, and a factory making organic rubber colors at Brooklyn, N. Y.

INDIA RUBBER COMPANY DOES RECORD BUSINESS

Tire sales of the India Tire & Rubber Company for the first four months of 1927 increased 158% in units over the same period of 1926, according to figures made public by company officials. The unit sales for 1927 were 132,107 as against 50,327 for 1926.

An even greater increase was made in tube sales for the same period. The 1927 figures were 131,971 as against 45,098 for 1926. This is an increase of 193%.

Sales of $2,227,352 in first four months of 1927 are reported compared with $1,340,135 in the corresponding period of last year. March sales totaled $614,072 against $333,616 last year and those of April were $701,589 against $328,897 in April, 1926.

Net profit in first four months after all charges including depreciation and Federal taxes was $141,240, equal to more than twelve times preferred dividend requirements for that period and equivalent to $1.70 a share on Common. The company recently sold $300,000 additional common stock to increase working capital. Present capital consists of $491,178 preferred and 76,392 shares of no par common stock. It has no bonds.

Rubber Testing Laboratories

The Bureau of Standards has recently issued a directory of commercial testing and college research laboratories, indicating in each case the kinds of testing the laboratory is equipped and staffed to undertake. Those qualified for rubber testing and research are so designated, and it appears that such facilities are widely distributed throughout the country.

Goodrich On The Air

The Goodrich Silvertown Cord Orchestra, which has been playing in vaudeville for 30 weeks, has returned to the studios of the National Broadcasting Co., New York where the orchestra will again take the air every Thursday evening. The National Broadcasting Co., includes a network of 19 stations, extending from Maine to Georgia and from St. Paul to Memphis. Another Goodrich orchestra will broadcast from San Francisco at the same time the New York players are on the air.

Exceptions In Tire Duty

The British tire import duty, which has been in effect since April 12, does not include bicycle tires or other tires that are not to be used on automotive vehicles. Truck tires are included, as are tire accessories of all kinds. Accessories is taken to include not only repair materials but valves, pumps and pressure gauges. The rate of duty is 33⅓ per cent ad valorem from the United States and 22 2/9 per cent from Canada.

Safety in Tire Fabric Mills

The Travelers Insurance Company of Hartford, Conn., has recently distributed a description of a number of safety devices which were designed, constructed and installed by the Fisk Rubber Company in its tire fabric plant. The Travelers company has recommended the adoption of similar equipment by other manufacturers of cotton goods.

New Name For Dunlop Corp.

The Dunlop Tire and Rubber Corporation of America, New York City, has filed a certificate in the office of the Secretary of State at Albany, N. Y., changing its corporate name to Dunlop Tire and Rubber Corporation.

Announcement —

On pages 256, 257, 258, 259 and 260 of this issue of THE RUBBER AGE will be found a greatly improved and enlarged section devoted to

The Market Place

Not only has the rapidly increasing number of advertisers in this section necessitated the addition of an extra page each issue, but the new arrangement of placing each listing in its proper classification will make THE MARKET PLACE of greater usefulness to our readers and of still greater value to each advertiser.

FISK AND FIRESTONE STOCKS ARE ACTIVE

Seiberling Rubber Co. Also Makes New Record—U. S. Rubber Touches New Low for Year—Goodyear Common Selling Lower—Rubber Down on Bull Market.

Rubber stocks on the exchange in the last two weeks have shown a general tendency to firm. In some cases stocks have risen to new high records for the year, as well as descending to new lows. Three rubber companies have taken new high points, these being Fisk, Firestone and Seiberling. Firestone stocks have climbed slowly since May 19, reaching 134 on common stock June 2. Fisk similarly touched a new high on June 1 with first preferred touching 89. Seiberling common was trading at 29 on May 19 but subsequently shaded off to 26¾ to date.

U. S. Rubber common and preferred shares were erratic throughout the last half of May and finally dropped to new low points on June 3. Common traded at 47⅜ and preferred declined on the same day to 101. An advance several weeks ago was mainly due to covering by shorts, who had put out stock at higher levels and who believed issue indicated support around 50. A report was circulated that the company's earnings for the first five months of the current year showed an estimated deficit of about $3,000,000. The cutting of tire and tube prices from 7 to 10% by Montgomery Ward and Co., and Sears, Roebuck & Co., was also expected to result in a similar reduction by U. S. Rubber.

Goodyear common stock, which two weeks ago was trading at around 57 has declined considerably, selling around 53 on June 1. The exchange was bullish on the first of June and many stocks rose to new highs, but rubber stocks were unmoved except U. S. Rubber which lost several points. General Motors passed 200 and a number of railway stocks rose violently.

Goodrich common stocks have shown a firmness in the interval since our last report, due to reports that the company's earnings for the first quarter are well ahead of those of last year. The company is over the peak of its spring borrowings and from now on will be liquidating both inventory and debt. It should make a good showing as of July 1.

Safety Executives Meet

The executive committee of the Rubber Section of the National Safety Council held a meeting in New York City on June 2 and 3. W. L. Schneider of the B. F. Goodrich Company is chairman.

Late Stock Prices

	Last Price		1927	
	June 3	May 17	High	Low
Ajax	9	9⅞	12⅜	9
Firestone	134	130	134	117
do 6% pfd.	107	105½	105½	101½
do 7% pfd.	103¼	101	101	98½
Fisk	16½	17½	18¼	16
do 1st pfd	87½	85	89	81
General	155	145	150	140
do pfd.	105	106	106	99¼
Goodrich	55	55¼	58¾	42¾
do pfd.	102	101½	103⅛	95
Goodyear Com.	53½	51½	51½	29½
do. pr. pfd.	111¾	110⅞	110½	104½
do pfd.	114½	117	117	98½
Hood	—	—	47	42½
India	25	25	30	28
Intercontinental	12⅞	13½	15¾	11½
Kelly Springfield	21⅝	23⅝	24¾	9½
do 1st pfd.	—	—	70	44
do 8% pfd.	65	—	70½	35
Lee	8½	8⅛	9	7
Miller	34¼	32	36⅞	32
do pfd.	—	102	104	100
Mohawk	—	—	25	15
do pfd.	—	—	65	65
Seiberling	26¾	24	29	21⅜
do pfd.	100	99	100	96
Star	—	—	2	2
U. S. Rubber	47⅜	51¾	67⅛	47⅜
do pfd.	101	103	111¼	101
U. S. Rubber Reclaiming	—	—	12	12
do pfd.	—	—	87	87

Rubber Proofers Busy

Rubber proofers turned out about 15% greater yardage in March this year than in March, 1926. The firms reporting to the Rubber Association produced 2,427,000 yards during the month as compared to 2,102,000 yards last year. Of the March, 1927, output 1,190,000 yards were clothing fabrics and 978,000 yards were auto fabrics.

Expand Giant Rubber Co.

An addition has been built to the plant of the Giant Tire & Rubber Co., of Findlay, O., as a result of increased business. The Giant factory manufactures cord and fabric tires and tubes. C. E. Hart is president.

TRADING ON EXCHANGE GENERALLY SLUGGISH

Trading on the Rubber Exchange during the last fortnight has been generally slow with the exception of June 1 and 2, when the market suddenly became the most active of the year. On June 1 the long spell of inactivity on the Exchange was finally broken when a liquidating movement, started by impatient bull operators, sent the active deliveries down 40 to 80 points. The day's transactions reached a volume of 571 lots, or 1,427½ tons, against only 37 lots the previous day. The selling movement engaged almost the entire session, and although good absorption checked the decline in values at times, it broke out afresh during the final hour and additional losses of from 20 to 40 points were added to early losses of 20 and 30 points. Operators in smaller tonnages who had been standing by for weeks waiting for someone to take the initiative, also threw their holdings into the general shake-out.

On June 2 liquidation continued in the most active market that has occurred so far this year. The net losses were not as severe as on the previous day, due in some measure to better absorption, but selling was, nevertheless, brisk and the volume reached 613 lots, or 1,532½ long tons. There was also a rally which carried active months up 10 and 20 points. The advances made on the Exchange were done in the face of a sharp decline in the cables from London where prices were from 19¾d to 19½d. July delivery led the market here in activity, opening 20 points lower at 40.10 and after advancing 40 points at noon, lost its gains in the afternoon and wound up at 40.20.

Closing prices on the Exchange, in all positions, appear in the table below.

Closing Prices on Rubber Exchange of New York, Inc.

MAY 19 TO JUNE 3

	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	SALES*
May 19	40.50	40.90	41.20	41.50	41.70	41.90	42.10	42.50	42.80	43.00	43.20	43.40	16
20	40.50	40.80	41.20	41.50	41.70	41.90	42.10	42.60	42.80	43.00	43.20	43.40	16
21	40.60	40.70	41.30	41.60	41.90	42.10	42.20	42.50	42.80	43.00	43.20	43.40	6
23	40.60	40.80	41.20	41.40	41.80	42.20	42.30	42.60	42.80	43.00	43.20	43.40	23
24	——	40.80	41.30	41.50	41.90	42.20	42.40	42.60	42.90	43.20	43.50	43.70	156
25	——	40.80	41.20	41.50	41.90	42.10	42.30	42.80	43.00	43.20	43.40	43.60	16
26	——	40.60	41.10	41.40	41.70	41.80	42.30	42.50	42.80	43.10	43.30	43.60	17
27	——	40.60	41.10	41.40	41.60	41.80	42.20	42.40	42.80	43.00	43.20	43.40	103
28													
30													
31	——	40.50	40.90	41.30	41.50	41.80	42.10	42.40	42.70	42.90	43.10	43.30	37
June 1	——	40.10	40.30	40.70	41.00	41.10	41.40	41.60	41.90	42.20	42.50	42.80	571
2	——	40.00	40.20	40.40	40.60	40.80	41.00	41.10	41.50	41.80	42.10	42.30	613
3	——	39.90	40.10	40.30	40.50	40.60	40.80	40.90	41.10	41.50	41.90	42.10	174
4													
6													

(*) In lots of 2½ tons each; totals are for old and new contracts.
(Prices are for new contracts)

BRITISH PROOFERS GAIN LITTLE, THOUGH ACTIVE

Conditions in the British rubber waterproofing and rainwear trade are peculiar, for while the demand for proofed coats is exceedingly brisk, acute price competition has led to ruinous price-cutting, with the result that much of the large business being done is yielding little or no profit to the manufacturers. This situation is very largely attributable to the great number of mushroom waterproofing concerns which have sprung up of late and to their price-cutting tactics.

The bulk demand at present is for artificial silks in plain and shot effects, Japanese silks and indianas, but unfortunately everywhere quality is being cut in both material and proofing.

Activity among proofers varies, but a large proportion of the trade is very well occupied. Very good business is being experienced in sheetings for embossed crocodile and lizard surface proofs. In other directions demand is chiefly for colored proofings in fancy shades, and the selection of colors is even larger than last year. Even in cotton, scarlet, orange and bright blue are being sought, and the variety is actually tending to restrict purchasing, since wholesalers prefer to put down sample orders for each shade.

Garment makers are rather slack, as they refuse to make for stock, and forward purchasing at present is simply non-existent.

CATALPO!

J. M. Bierer In Europe

J. M. Bierer of the Boston Woven Hose & Rubber Co., Cambridge, Mass., who spoke recently before a London meeting of the Institution of the Rubber Industry, is spending several weeks visiting the Netherlands, Belgium, Switzerland, northern Italy, the Riviera and other parts of France. Following his address, which was very well received, Mr. Bierer visited several British rubber factories.

New Exchange Members

The following new members have been admitted to the Rubber Exchange of New York, Inc.: John Norman Hopkinson, of the General Rubber Co., William T. Baird, of the Baird Rubber & Trading Co., Inc., and Nelson Stiles Robinson.

New Gillette Warehouse

The Gillette Rubber Co., Eau Claire, Wis., is erecting a warehouse 82 by 135 feet, according to a recent announcement. The work will be completed in the early summer.

ACREAGE OF PHILIPPINE RUBBER GROWING SLOWLY

Having secured a small appropriation for the work, the Philippine Bureau of Agriculture has set aside a tract of land in Mindanao on which to start experimental rubber plantings. The Bureau is already carrying on experimental tapping a small grove of mature trees in the province of Bataan and also on another grove in northern Mindoro. About 400,000 Hevea rubber seedlings have been raised by the Bureau for distribution to Philippine peasant farmers. It is reported, however, that these are not being taken rapidly. More planting is being done by large land-owners than by small ones. A Mr. Nieva, who is a prominent Philippine planter, has planted 5,000 trees of Hevea on a tract in southern Mindoro and is now planting 25,000 trees in Mangbiro, Tayabas Province.

Chemists Visit Goodrich

Almost 200 chemists and technical workers who attended the convention of the American Institute of Chemical Engineers at Cleveland last week journeyed to Akron for a visit to the plant of the B. F. Goodrich Company. One of the features of the visit was the reading of a paper by Goodrich chemists on "Uses of Rubber in the Chemical Manufacturing Industry".

INDIA CORES Making History !

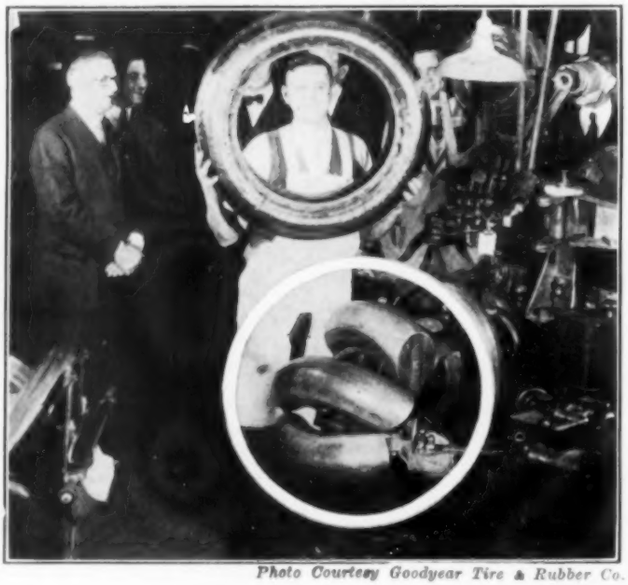


Photo Courtesy Goodyear Tire & Rubber Co.

WE are glad that the recent production of the one hundred millionth tire of the Goodyear Tire and Rubber Company was accomplished with the aid of an India Core. And just as this particular core played its part in making this famous tire, as shown in the accompanying illustration, so have hundreds of India cores had a part in building the tires that went before.

Goodyear is only one of the larger tire factories which are completely equipped with India Cores supplied by us.

The India Machine & Rubber Mold Co.

174 Annadale St. *License granted to The Bridgwater Machine Co.* Akron, Ohio

LATIN-AMERICA STARTS GROWING MORE RUBBER

Continued interest in small rubber planting projects in Latin-America is indicated by recent dispatches reaching the Department of Commerce which tell of efforts in three countries.

The government of Ecuador has issued a decree granting to the Sociedad Anomima de Explotacion Agricola Occidental, for the sum of 6,000 sucres, 20,000 hectares of land in the region between the Quinindi and Blanco rivers. The joint stock company engages to build roads in the territory conceded to it and to plant rubber and other tropical crops, including coffee.

Experimental plantings of Hevea rubber are already being made in the lands of the Guatemala Plantations, Ltd., on the Pacific coast of Guatemala between Cahmperico and San Jose. The company owns an area of about 320,000 acres, and is engaged in developing it for tropical produce generally in connection with which the experimental rubber work is going forward.

About 20,000 Hevea seeds have been secured from Mexico and British Honduras and the seedlings are being transplanted in the present wet season. The growth of the young seedlings under irrigation during the dry season was satisfactory and the percentage of germination was high. The seedlings are to be transplanted in several experimental plots, under varying conditions and methods of planting, to test soil suitability in different parts of the property.

Rubber planting activity in Bolivia is also forecast by a report from LaPaz to the effect that a grant has been made to a group which is said to have American backing to the extent of $4,000,000.

NEW PROCESS PERFECTS SATIN FINISH RUBBER

The chemical engineers of the Du Pont De Nemours & Co., of Wilmington, Del., have discovered a process for the perfection of satin finish gum rubber. Through this discovery, the usual finish is so softened that it has the effect of a fine fabric rather than a rubber surface.

The introduction of this new type of rubber permits the creation of rubberized tea aprons with a fine satin appearance that marks a distinct departure from the conventional type of household aprons. The new satin finish is available in eight colors, including silver gray, rosewood, blue, green, and in mottled effects combining all of these shades.

New Rubber Factory Opened

A newly-organized rubber company, known as the Goodyear Rubber Ball and Novelty Corporation, has opened a plant in Malone, N. Y., where it is manufacturing about 16,000 rubber balls per day. As the season advances, the plant will also manufacture other rubber goods.

MERGER OF GOODYEAR AND U. S. RUBBER DENIED

Rumors of a merger between the Goodyear Tire and Rubber Company of Akron and the United States Rubber Company of New York were circulated in the New York financial district on June 6 but were promptly denied by officers of the companies concerned. The immediate cause of the rumors was the disclosure that Edgar B. Davis, former director of the United States Rubber Company, had purchased about 120,000 shares of Goodyear common stock from F. A. Seiberling.

During the Goodyear litigation which was ended recently it was frequently rumored that Mr. Davis was to play the role of peacemaker. It now appears that he is one of the largest holders of Goodyear common stock, having about 15% of the total. The denials of any merger plans are being taken seriously since Mr. Davis' interest in Goodyear stock offers no real basis for such a transaction. The purchase of the stock is generally regarded as a speculative one and to have no further significance.

Mason Tires On Racer

In a recent Italian automobile race held at the Corsa di Alessandria track, two Buggati cars equipped with Mason hylastic tires, won first and second place. The race was held on a 500-mile basis and tires were not changed on either car.

ROYLE

Tubers
Strainers
Insulators

Localized heating and cooling.

Parts interchangeable.

Choice of drives.

Everything accessible and under complete control.

Divided Jacket Royle Strainer with 6-inch cylinder.
Output equal to the ordinary 8 or 10-inch machine.

JOHN ROYLE & SONS, Paterson, N. J.

Represented by Akron Rubber Mold & Machine Co.

SAYS FRENCH GUIANA IS SUITED FOR RUBBER

Abel Gerbron, well-known French explorer, who has spent 30 years in various French colonies, is now in the United States in an effort to interest American companies in rubber cultivation in French Guiana. Mr. Gerbron's most recent work has been in French Guiana and he is enthusiastic over the advantages which that colony would have from a rubber production standpoint.

The explorer, in a number of speeches, has dwelt particularly on the immense natural resources of French Guiana, especially with regard to the exploitation of rubber. This consideration, in addition to that of its proximity to the United States, leads Mr. Gerbron to believe that French Guiana is a colony which will not be overlooked if Americans undertake planting in a big way.

42,000 Firestone Tires

With the new Akron factory in operation, the Firestone Tire & Rubber Co., is reported to be producing between 40,000 and 42,000 tires a day. The company expects to reach a daily production of 45,000 tires before long. The unit sales have been almost 100% ahead of last year, but in view of a 25 to 30% lower level of selling prices in the current year, Firestone is making as its goal for 1927 last year's sales total of $144,000,000.

The Philadelphia Rubber Works Company

Manufacturer of

RECLAIMED RUBBER

of

STANDARDIZED QUALITY

NEW YORK
52 Vanderbilt Ave.

AKRON, OHIO PHILADELPHIA, PA.
Land Title Bldg.

BIG APRIL EXPORTS OF MECHANICAL RUBBER

Exports of mechanical rubber goods from the United States in April were the largest yet recorded in 1927. The value of shipments was $657,073, exceeding the 1926 average monthly exports by more than $125,000.

Every item of the mechanical rubber goods class except rubber and friction tape established new volume and value records for 1927. The unit value on shipments of belting was 52 cents per pound, or two cents per pound decline from the average during the first three months of the year. The following totals values were made for different classes of materials:

Belting, $249,771; hose, $254,498; packing, $109,670; and tape, $43,143. British South Africa was the best market for American rubber belting in April. The United Kingdom took approximately one-sixth of the hose exported from the United States in the same month.

Official figures show that during 1926 rubber belting exports increased at a considerably faster rate than did leather belting exports. Rubber belting showed a 2.4 per cent gain by volume and a 9.6 per cent gain by value. The United States now leads all countries in the exporting of rubber and balata belting, with the United Kingdom in second place. The latter country is foremost in the balata belting trade.

Classify Scrap Rubber

The work of the Rubber Division of the National Association of Waste Material Dealers in the current year, according to its chairman, David Feinburg of Boston, will consist largely in making up classifications of scrap rubber so that material can be graded economically and to the best advantage of consumers. Mr. Feinburg also means to lead his Division in a fight on numerous trade abuses and to do everything possible to deliver scrap rubber to the reclaimers in the best form at the lowest prices.

Rubber Firms Incorporated

The following new incorporations of rubber firms have been announced: Colvin & Servis, Inc., Rahway, N. J. Capital, $125,000; Arthur R. Colvin and Frank W. Servis. The Southern Tire Co., Inc., New Orleans, La., charter filed as a foreign corporation. The Casterton Tire & Rubber Co., Norfolk, Va., increased its maximum authorized capital stock from $5,000 to $50,000; W. J. Casterton, president.

CATALPO!

ATTACK CONTINUES ON BRITISH RESTRICTION

"Evening Standard" Stresses Dutch Rubber Production — H. Eric Miller Defends Restriction Policy — Increased Dissatisfaction Since 60% Restriction.

The advisability of continuing British rubber restriction after November 1, 1927, when it will end its fifth year, is proving a constant topic of discussion in rubber circles since the question was brought up some weeks ago by London newspapers. Since the legislation is not at this moment regarded as oppressive to United States interests, this country is taking no part in the debate but there has been no shortage of comment of both kinds from British sources.

The lead in the discussion which was taken by the London "Evening Standard" was obviously not soundly based but it has proved sufficient to arouse the proponents of restriction to defend the legislation every time it is attacked. The "Evening Standard" devoted most of its attack to the rising importance of the Dutch rubber production and attempted to show that the Dutch were slowly displacing the British as the leading producers. "British supremacy in the rubber plantation industry," it said, "jealously coveted, but never captured by the American tire manufacturer when he had a chance to do so in 1921 (the time of its severest depression) is, in its day of abounding prosperity, being slowly surrendered to the Dutch".

The immediate and numerous replies to this challenge included those from H. Eric Miller and A. A. Baumann, both of them well-known in the British rubber trade. Both contended that the newspaper's statement was contrary to the facts and defended the policy of continuing restriction.

Since this discussion took place, the future of restriction has been mentioned at almost every plantation company meeting. The concensus of opinion seems to be that restriction must be continued and unless there is a considerable strengthening of the opposition, the British Colonial Office can hardly consider itself under a mandate to make any drastic revision at the end of the present restriction year. Close observers are remarking that although restriction has its faults and the British have no desire to bear the burden for the Dutch any longer than necessary, it is not clear how restriction can be abandoned without inviting a return of the depression of 1921. In other words, the world's rubber producing capacity stills exceeds the consumption and the British take up the slack by their restriction program, and will have to continue to do so unless they can be content with much lower prices in order to produce 100%.

Plantation managers have been stressing the fact that production costs per pound are inevitably much higher while the estates are on a 60% basis since they must maintain the large working forces which they needed when 100% was being exported and which they will need again as soon as the scheme relaxes somewhat. This inflexibility of labor supply becomes one of the strongest arguments against constantly changing the exportable percentage.

Much attention has naturally been given to the greatly increased consumption of reclaimed rubber in the United States. The argument that rubber restriction merely forces the world to use substitutes has been repeated many times since the Department of Commerce revealed that the United States used 165,000 tons of reclaimed rubber last year.

Dissatisfaction with restriction has also increased since the reduction of exports to a 60% basis has failed to bring higher prices immediately. In fact, prices have shown a greater tendency to sag since the 60% basis was announced. This means of course, that this low basis may have to be continued for several months.

At the present moment however, there seems to be common agreement with Sir Robert Horne's statement to the effect that "you may consider it right or wrong to have instituted the restriction scheme, but I am sure that you will agree that having adopted it, to scrap it now would spell disaster to the industry".

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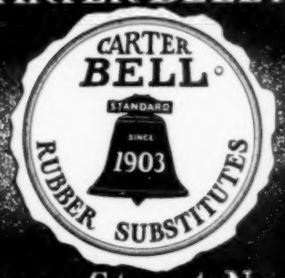

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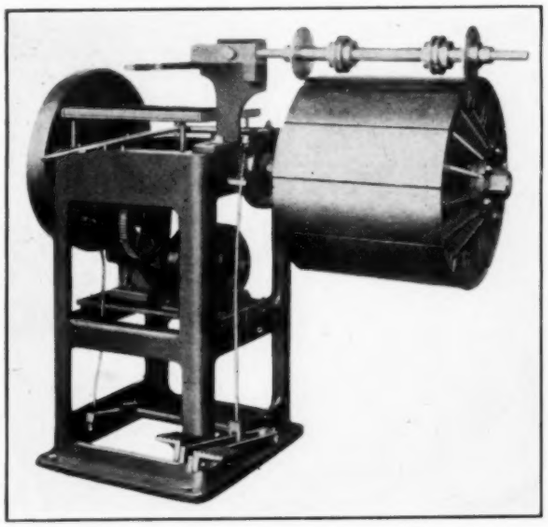


View of the new Akron Standard Mold Company Machine for use in building tires by the flat drum process. The drum is collapsed by means of a lever.

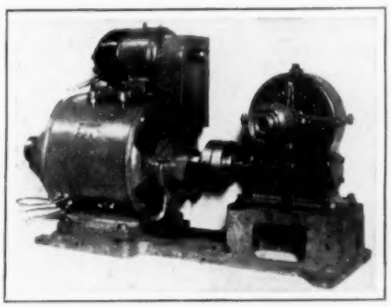
A new machine for building tires by the flat drum method has been perfected by Akron Standard Mold Company, Akron, Ohio.

The manufacturer calls attention to several interesting features: the drum is operated by friction drive with a foot pedal by which the operator may secure any drum-speed up to 150 r.p.m. To facilitate quick drum control a convenient foot brake is also provided.

The new machine is so constructed that a solid drum, a single segment collapsing drum, or a complete collapsing drum may be used.

With the complete collapsing drum, bead diameters can be varied a full inch. The drum is instantly collapsed by a hand lever for the removal of the tire and as quickly "set" again for the next one. The machine is equipped with a ¾ H.P. motor and also a tool tray.

Variable Speed Reducer



De Mattia Speed Reduction Unit

A new Variable Speed Reduction Unit designed for use with rubber machinery has just been announced by De Mattia Brothers, Inc., Clifton, N. J. The unit provides any desired speed through a range of ten to one, being variable by any fraction of a revolution between the high and low speeds by means of push button control, located at any desired position relative to the reduction unit.

The illustration shows a 1 h.p. unit whose driving shaft speed is 4 r.p.m. and the high speed 40 r.p.m. This unit is used to operate a conveyor 150 ft. long for taking rubber tubes away from a tubing machine. An installation of this kind requires delicate control, as the surface speed must be exactly right for the stock being run, in order not to either stretch or crowd the tubes. It is a mechanical advantage to have the unit at the far end of the conveyor and the push button control enables the operator at the head end to maintain the desired speed.

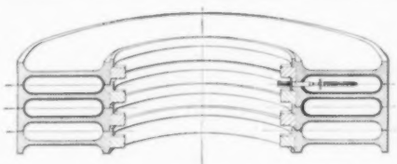
The motor is connected to a worm reduction unit by means of Francke flexible couplings and the unit is mounted on a common bed plate. According to the manufacturers, it is quiet and efficient in operation, is trouble-proof, and absolutely accurate on speeds, and consequently is adaptable to any number of installations where delicate control is required.

SEMPLE-LEE PROCESS FOR MOLDING TUBES

The Semple-Lee process of molding inner tubes differs from other methods in that no special vulcanizers or other large equipment is required to produce the finished tube. Flat-shaped molds in two sections are used to hold the shaped tube. A number of these molds are then stacked in vertical hydraulic vulcanizers and the tubes are cured similar to tires. The molds may however be adapted for use in individual watch-case vulcanizers.

According to the manufacturers, the shape of the Semple-Lee molded tube is correct because it cannot buckle, pinch or twist when put in the casing, and because the valve stem is always in the exact center of the tire. When inflated, the outer circumference is slightly condensed while the inner circumference is stretched.

The shape of the molded tube is shown by the mold cavities in the accompanying illustration. The molds are made of a special aluminum alloy, and are light and easily handled. It is claimed that the cost of making tubes by this process is low and that the floor space required is small compared with other tube processes. (Semple-Lee Processes, Inc., Akron.)



Semple-Lee Molds Showing Shape of Molded Inner Tubes

MACK BUSES CONTAIN RUBBER IN 25 PLACES

The International Motor Company, New York, has announced that rubber is used in no less than 25 places in the Mack buses which the company is now marketing as companion vehicles to the well-known Mack trucks. Many of these uses are said to be exclusive in Mack buses, having been originated and executed by the company's engineers.

The Mack rubber shock insulators which are used at the spring ends in place of the usual steel shackle and bolt, are the same in design as the insulators on the Mack truck. They have previously been described and illustrated in THE RUBBER AGE. Similar rubber cushions are used to support the gasoline tank, the transmission, radiator, engine, steering wheel and as a torque insulator. The torque insulator is really a rubber cushion inserted between the engine and the transmission to damp out vibration.

According to the engineers, every application of rubber in the Mack bus chassis eliminates some metallic contact or connection between various assembly units and the chassis, thus reducing to a minimum all kinds of vibration, wear, road shocks and noise, as well as eliminating a considerable amount of lubricating. The use of rubber at the steering assembly is meant to relieve driver fatigue, while the cushions on which the gas tank rests are meant to neutralize twisting strains.

Auction of Syra-Cord Co.

The entire contents of the tire and tube plant of the Syra-Cord Tire & Rubber Co., of Syracuse, N. Y., will be sold at public auction in Syracuse on June 14. W. Danford will be the auctioneer. A partial list of the equipment on hand which will be auctioned include Farrel mills, a Farrel calender, Southwark tire vulcanizers and hydraulic elevators, Birmingham bias cutter and Royle Perfected tuber, direct drive. Also complete equipment for testing laboratory, and complete set of molds, cores and rings, including balloon molds, etc.

Cleveland Equipment Moves

The Cleveland Equipment and Engineering Co., have announced the removal of their offices from the Swetland Building to 6306-6310 Kinsman Avenue, Cleveland, Ohio, where over 10,000 feet of space is available for storage as well as ample office space. H. D. Andress is president.

Wildman Plant Up for Sale

After a number of postponements, the plant of the Wildman Tire & Rubber Co., Port Clinton, Ohio, was put up for sale on Saturday, June 4 on the property. A number of machinery dealers were on hand and it is reported that the United Rubber Machinery Exchange, Newark, N. J., put in the highest offer for the machinery. The bid, however, was not definitely accepted in view of the lack of bids on the property and a single bid of $8,000 for the buildings. Decision to accept the machinery bid is expected shortly.

The plant comprises 31 acres of land with a 1,000 ft. railroad siding, six brick buildings with floor space of 55,834 sq. ft., power plant and complete machinery for making tires and tubes. Jesse P. Dice is attorney for the receiver and Wm. J. Slater is receiver, both of Akron, Ohio.

Erie Plant at Capacity

Having operated to full capacity for several months, the Erie Tire Corporation, Sandusky, O., is now installing additional machinery and equipment to handle increased business, officials of the company have announced. The plant at present is employing more men and producing more tires than ever before. Day and night shifts are being operated in an effort to keep pace with the orders.

Warehouse for Samson Tire

The Samson Tire & Rubber Co., of Los Angeles, Calif., has leased space in the Essex warehouse in Newark, N. J., which will be used as a distributing point for the company's New Jersey dealers. The warehouse will be under the direction of E. A. Meek, district sales manager.

Barberton Plant for Sale

The plant of the Rubber Products Co., Barberton, Ohio, was recently shut down after the appointment of a trustee in bankruptcy. The property for sale includes 28 acres of land, a railroad siding and 36 buildings among which are 2 factory buildings, a two-story office structure, heater room, dipping plant, etc. It contains almost $100,000 worth of machinery, molds, cores and laboratory equipment. C. B. McDowell, Central Savings & Trust Building, Akron, Ohio, is Trustee.

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Tucker Factory to be Sold

The sale of the plant of the Tucker Rubber Co., 32 Spencer St., Buffalo, N. Y., is announced for Tuesday, June 21, at 10 a.m. on the premises. Products formerly manufactured were garden hose, mats, heels and soles and mechanical goods. A complete line of machinery for making these classes of rubber products is on hand for disposal in piecemeal lots. The auctioneers are Samuel T. Freeman & Co., Philadelphia, Pa., from whom descriptive catalogs may be obtained.

United in New Quarters

The United Rubber Machinery Exchange, Newark, N. J., have moved to their new location at 319 Frelinghuysen Avenue. The new office building was completed during the first week in June but a large quantity of rubber machinery had been previously stored in the large sheds in the rear of the property. The new location enables United to carry large stocks of machinery and in addition good shipping facilities are provided by a railroad siding on the grounds.

Hemingway On Trade Assn.

M. L. Hemingway, generl manager of the Motor and Accessory Manufacturers' Association, in which several tire companies hold memberships, was elected president of the Trade Association Executives in New York City at their recent annual meeting. This organization comprises 115 managing executives of trade associations with headquarters in New York City.

Albert Opens Boston Office

Frank B. Batchelder, formerly of the Fisk and Murray rubber companies, has been appointed New England representative of L. Albert & Sons, dealers in rubber machinery of Trenton, N. J. Mr. Batchelder will make his headquarters at 80 Federal St., Boston, Mass. In addition to this office, L. Albert & Son maintain offices and warehouses in Trenton and Akron.

Rubber Warehouse Burns

The warehouse of the Greenville Rubber Co., of Greenville, O., was recently destroyed by fire at an estimated loss of about $20,000. The warehouse contained rubber and machinery used in making patches for tires. The building was not owned by the company but was leased for a term of years.

V. G. Thomas & Co. Formed

V. G. Thomas, who recently resigned from Wishnick-Tumpeer, Inc., has announced the formation of V. G Thomas & Co., to deal in dry colors, rubber and paint chemicals and mineral pigments. Offices have been opened at 99 John St., New York city.

Sustain Rubber Directors

The board of directors of the Virginia-Carolina Rubber Co., of Richmond, Va., were sustained in the Richmond Chancery court in their claim of legal existence which was questioned by certain stockholders of the company. The suit against the directors arose over a misunderstanding of the prerogatives of certain stockholders and their selection of a board.

Resigns from Utility Co.

G. H. Seely, who has acted as Akron representative of the Utility Manufacturing Co., Cudahy, Wis., has resigned his connection with that firm in order to become president of the Thermo Instrument Co., Akron, specialists in recording and control apparatus.

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Vol. 21 June 10, 1927 No. 5

The Quiet Pool

THE CONTINUED stability of the crude rubber market in the face of an unexpected large consumption in this country and severe rubber restriction in the British colonies has revived the speculations as to the activity of the so-called American rubber pool as perhaps no other circumstances could. Daily newspapers in this country and abroad, in addition to the trade press, are not infrequently calling attention to what the pool has apparently accomplished and are hazarding estimates concerning the tonnage of rubber now held by the organization.

One such estimate is that the pool is holding from 25,000 to 30,000 tons of rubber in the United States with additions being made to this amount from time to time. It is also estimated that the organization has around 15,000 tons of rubber stored in London which it does not hesitate to use in influencing the market from day to day.

In the minds of many operators in the rubber markets these estimates are as good as any others since it is assured that all of them are open to serious question. The success of the pool in masking its operations has astonished many, which constitutes a big factor in its ability to steady the market. It is recalled that the knowledge that the pool had been formed at all became generally known only through the inadvertance of one of the financial houses concerned. With that exception, which gave the trade the biggest thrill of the year, the pool has been able to operate without publicity and it is only when a stable market supplants what might well be a nervous one that the speculations as to pool operations become prominent.

A large part of the effect which the existence of the pool has had can be called psychological. Had the pool chosen to operate through a newly established agency whose activities could be gauged and credited solely to the pool, it would have had the effect only of its actual purchases and holdings. With its activities screened behind or among those of an established company which has been a large operator in rubber for many years, the pool has the possibility of being credited with greater strength than it actually possesses and of therefore being able to set the market right without delay in case of unwarranted movements.

Although the stock situation has its own steadying influence on the market, other conditions have taken such a turn that without some artificial stabilizer prices would probably have shown some tendency to run away. In the first place, many people, particularly in London, were amazed that the exportable percentage was allowed to slide down to 60 per cent in Malaya and Ceylon. To their minds the restricting of exports from those colonies to such an extent could only mean a soaring market within a few months. The opening would likely have appealed to such speculators as were so active in the British market in 1925 if there had not been an unknown, artificial factor threatening to upset their calculations at any time. As a result, speculators have been wary indeed in the last few months.

The other bull point, that of unexpectedly large rubber consumption in the United States, has likewise had its effect curtailed by the lack of knowledge as to how much rubber the pool was holding and what policy it would adopt in the face of a sharp increase in prices. As a mystifying, artificial factor in the rubber market the pool has certainly proved itself no bad second to the rubber restriction regulations which are still subject to change at short notice.

Peace at Goodyear

IT WAS welcome news to the rubber industry generally that the litigation involving the Goodyear Tire and Rubber Company, its stockholders and management, had been settled amicably out of court. It seems now that this pioneer company will be able to follow up the good start which it was able to make in the first months of this year. With the quarrels ended and the refinancing accomplished, a satisfactory showing, even with tire prices at their present level, is confidently predicted. Goodyear held a pre-eminent place in the American rubber industry last year with sales above $230,000,000. The tire plants in Ohio, California and Canada are capable of producing around 65,000 tires per day and during the present year they have been operating at capacity a good part of the time. The well-being of such a huge organization is not without its meaning to the entire industry of which it is a part.

Safety in Rubber Manufacture

IT IS a pleasure to present in this issue a rather complete statement concerning the work of the Rubber Section of the National Safety Council. Among the companies who are members of the Rubber Section the scope and effectiveness of its work is of course well known, but there are hundreds of firms who could learn with benefit about what has been done in reducing hazards in rubber factories. As is true so many times, the companies who have not had the inclination to join in the safety effort are among those who need it most. In eight years the Rubber Section has gathered into its membership many of the best-known rubber manufacturers of the United States. It is still seeking the cooperation of other companies and it is hoped that each month will see an increase in the list of companies working for safety in rubber manufacture.

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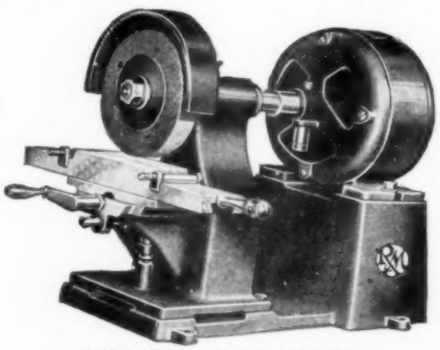

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Working For Greater Safety in The Rubber Industry

The Rubber Section of the National Safety Council Is Making Rubber Factories Safer Places in Which to Work

By Wallace Brockway

THE FORMATION of the Rubber Section of the National Safety Council on October 4, 1919, was the result of a general demand for some sort of co-operative service leading to improvements in the safety, health and sanitation conditions in the rubber industry. The purpose of the Section is to provide a medium for the exchange of ideas and experience that is so necessary in securing the efficient and effective solution of the many problems that are encountered.

In order to best understand what can be accomplished through the Council's Rubber Section, it may be proper to examine its organization and the scope of its various activities.

When the Council was organized fifteen years ago, the founders had the wisdom to realize that a great many accident problems would have to be investigated by groups of members representing specialized industries. In 1915 there were fifteen industrial sections; now there are twenty-one. Since 1915, officers and committees have been elected annually to represent industrial groups and to intensify the work of the National Safety Council within these groups. The officers and committees work within their sections by seeing that all sectional members carry out a complete safety program during the year; they are also active *outside* the section by urging Council membership upon others in the industry.

Sectional officers consist of a chairman, one or more vice-chairmen, and a secretary who jointly with the various committees and their chairmen guide and direct the sectional activities. The three most important committees are Poster, Program, and Membership, but there are always more appointed as needed.

In the case of the Rubber Section, some of the other committees are Engineering, Statistical, Safe Practices, Health Hazards and Advisory.

While in some cases it has been found advisable to concentrate the official activities in the hands of a few men who are particularly active and willing to attend conferences and the annual safety congress, the phenomenal eagerness of the men in the Rubber Section has allowed the various offices, chairmenships, and committeemenships to be distributed among a large number.

The membership of the Rubber Section is recruited largely from the territory east of the Mississippi, where most of the rubber manufacturing is concentrated, although there is one member in Nebraska. Fourteen states are represented in its roster.

Since 1919 the Section has tripled in size. Much of this brilliant record is due to the invaluable aid of the Rubber Association of America, which has among its members most of the leading companies in the rubber industry. This enormous group plugged steadily for the National Safety Council, and highly lauded the Council's work in a publication issued to members. Now, with forty-five member companies, the Rubber Section stands on its own legs, but this work of the Rubber Association of America is fully appreciated.

What, briefly, are the advantages enjoyed by members of the Rubber Section of the National Safety Council?

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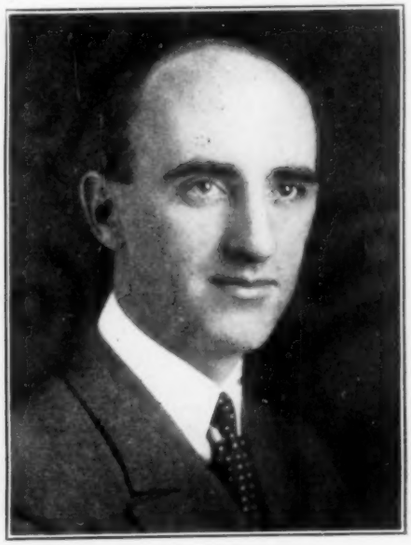
M. A. Quirk, *Vice-Chairman*



R. C. Salisbury, *Secretary*

OFFICERS OF THE RUBBER SECTION OF THE NATIONAL SAFETY COUNCIL

boards. Attractive safety calendars are issued annually so that the safety work may be carried directly into the home, for these calendars are educational in intent. Slides and motion picture films are at hand for those needing them. Safe practices pamphlets, dealing in a detailed and accurate way with various hazards peculiar to the rubber industry, are valuable elements of the service, while the thick volumes of the proceedings of the Annual Congress are, with their companion books, a veritable encyclopedia of safety information. Concerning the volumes of the proceedings, one enthusiastic member said, "They alone are well worth the price of a membership."

Belonging to the Rubber Section entitles each member to a number of copies of the National Safety News each month, according to a schedule based on the number of workers. The News is a treasure house of current safety literature and practices, and always contains helpful ideas and suggestions for the men who are endeavoring to prevent accidents. Another important service rendered by the Council is through its library which contains the most authoritative and comprehensive safety literature available.

Consultation Service for Member Companies

Then there is the opportunity of conferring with experts afforded by the consultation service, by which not only the opinions of engineering experts at the staff office are gained, but the experience of others in the industry is sifted, reduced to its simplest terms and the conclusions made known to the member. Concerning this exchange of ideas, S. M. Schott said at a meeting of the Rubber Section at the Ninth Annual Safety Congress, Milwaukee, 1920:

"The larger firms and manufacturers, as a rule, have very good and elaborate organizations for the improvement of conditions governing safety and health conditions, and have a staff of men who devote their entire time and thought to these subjects. The smaller firms, however, are not as highly developed, and need guidance and assistance which can be given by co-operative efforts. The interchanging of ideas and experiences will be of great benefit to them. This service will gladly be given, and it is hoped that they will take advantage of the discussion and solutions of problems which are the result of the intensive thought and effort which could only be obtained by dealing with large groups of men, and handling materials and machinery on a big scale."

An excellent summary, indeed, of the exchange idea! That this unselfish desire to serve one another is having a marked effect on the industry's accident rate is eloquently shown by the yearly statistics covering accidents in plants belonging to Rubber Section members. In 1925, when 22 concerns employing 85,730 workers reported, the severity rate, or days lost per thousand hours worked, was 1.11, while the frequency rate, or accidents per million hours worked, was 29.15—both excellent showings. The 1926 figures are now being compiled, and will be available in a month, or two at the latest.

Helpful Papers Read at Meetings

It is an instructive and illuminating process to read the proceedings of the Rubber Section from its inception until the present day. For illustration, a few of the papers presented at the various meetings have the following titles: "Dust Explosions in the Rubber Industry," "Safe Handling of Solvents," "Elimination of Occupational Diseases in the Chemical and Rubber Industries" and "Vulcanizers." These subjects are typical of those discussed at the Annual Congress.

The Rubber Section has enlarged the scope of its activities by keeping closely in touch with the projects of the Chemical Section of the Council. Every year, at the Annual Congress, the two sections have a joint session at which matters of common significance are discussed. One of the most important results of this co-operation was the exhaustive research and report on benzol poisoning, published in May, 1926.

Various members of the Rubber Section were also active in drafting the National Safety Code for Rubber Machinery. J. E. Congdon, United States Rubber Company, New Haven, Conn., was chairman of the committee in charge of the project; E. W. Beck, United States Rubber Company, New York, was the secretary. Both of these men are most active in sectional affairs, Mr. Congdon as chairman, Engineering Committee, Mr. Beck as a member and past chairman of the Advisory Committee.

The Rubber Section is assured a year fruitful of much mutual help. Assisting the chairman, W. L. Schneider of the B. F. Goodrich Rubber Co., Akron, O., are M. A. Quirk, Morgan and Wright Plant, United States Rubber Company, Detroit, Mich., and R. C. Salisbury, Fisk Rubber Company, Federal Division, Cudahy, Wis., respectively vice-chairman and secretary, and the various committee chairmen and committeemen.

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Manufacture of Rubber Bands

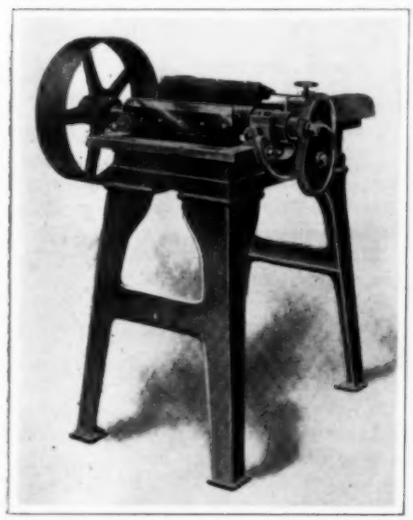
Pioneer Rubber Article is Still Important
And Calls for One Ton of Rubber Per Day

RUBBER BANDS are one of the pioneer products of the rubber factory. Whereas they were once quite prominent, today they are ranked with many small items such as jar-rings, erasers, pencil tips, and a variety of molded articles. From a numerical standpoint, any one of these items would far exceed the combined output of tires and footwear with perhaps several other of the larger kinds of rubber goods thrown in. From the standpoint of total sales value, however, they are completely overshadowed. Nevertheless, rubber bands and similar items still have an important place in rubber manufacture.

Approximately a ton of rubber is used daily in this country alone for making rubber bands. Factory methods and appliances have been changed from time to time with the idea of effecting a saving in labor costs. This is about the only way in which the cost of manufacturing rubber bands can be lowered since the goods are usually so nearly pure gum that there is little opportunity for the compounder to effect a saving.

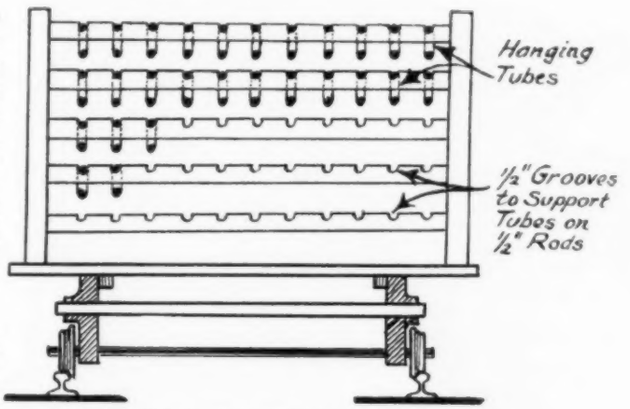
Among the ingredients the band manufacturer uses in connection with the rubber and vulcanizing agents, in very small quantities and for technical purposes only, are zinc, carbonate of magnesia and white sub. parafin wax. Actual manufacture is divided into three departments: (1) preparing the rubber and making it into tubes; (2) vulcanization; and (3) chopping the tubes into bands of any desired width, from 1/16" up.

Only a very firm curing rubber is selected for band making. Upriver fine is considered by some as preferable to plantation rubber. The best South American grades seem to stand the rough preparatory treatment and recover with vulcanization better than other rubbers. However, washed and seasoned Paras are not always as favorable in price or as readily procured as crepe, which may be the reason for the eight or ten American band manufacturers using more of the latter than the former. Crepe also has an advantage in that it produces a lighter shade of goods which buyers take to be an indication of quality.



Adamson Band Cutter

The usual factory practice is to wash all rubber for high grade articles, as otherwise the impurities that accumulate on the surface of the bale will cause trouble when running, or make imperfections of a kind difficult to detect before vulcanization. Washed rubber breaks down somewhat more rapidly than if taken directly from the case, so the cost of cleaning is partially offset by the saving in time and power when milling.



• END VIEW of CURING FRAME •

It is unfortunate that the natural qualities (strength, vulcanizing and aging) have to be considerably reduced to make the rubber workable, as these are the most desirable attributes in every line of goods and especially for such articles as bands which are not reinforced by fabric or other material. Vulcanization brings back this loss in some degree but the longer the rubber is milled (as for some kinds of smooth-surfaced articles) the less able is the vulcanizing process to do this, and the less predominant is the strength and snappy recovery so necessary in rubber bands. Probably very smooth open-cured articles should not be expected to be as serviceable as rough finished ones.

Most of the tubes from which rubber bands are cut are made on tubing machines. However, some of the tubes for bands, both here and abroad, are still made of calendered sheet, and some foreign bands are of cut sheet. Calendering gum draws it down to a required gauge but in doing so causes a considerable difference in stiffness and elongation between the length and cross-section of the sheet. The temperature of the delivery roll has an effect upon the length-wise elasticity. Nearly all stocks, whether pure or compounded, run better and easier on friction motion. If the sheet is above 1/16" in thickness, blisters and air spots are apt to form, but only a very small percentage of bands are thicker than 1/16" and these are for special purposes.

Before rubber can be run smoothly on tubing machine or calender, it must be plasticised by milling. Less milling and some pigmentation may be preferable to killing the gum through overworking. For wrapped and molded articles only enough milling is done to enable running to gauge since the molds or mandrels make the finish, but bands are always open cured and therefore more plasticity is required to obtain a smooth surface. Rolling up the stock in fine sheeting as it is calendered improves the surface. In forming the calendered rubber into tubes, the sheet is unrolled on a wet zinc table. It is then sponged over and hand cut since it is necessary to have beveled edges on the strips. Skill is

required to knit the smooth-cut edges so that the lap hardly shows even when the band is extended. Unless the work is carefully done, hand-made tubes are apt to part at the joint.

Birmingham Band Cutter

Of the two methods of running stock the calender is very much faster than the tuber, especially for pure gum. The latter is used essentially for running medium to low quality stocks and is most effective on plastic compounds and those that are not too sensitive to heat. Its adoption for forming high-quality tubes for rubber bands is due to the fact that the seamless article is more reliable than the hand-made and the tuber is the only machine that can do the work. The tuber functions the reverse of calendering, the gum being driven instead of drawn, resulting in an almost equal elasticity in length and cross section. It would appear that there is just so much ductility in pure gum or compounded stocks of different qualities; the calender draws most of this in one direction, while the forcing machine spreads it evenly in all directions.

Whether the tubes are hand-made or seamless, the apparatus for curing them is the same. The vulcanizer carriage is fitted with frames about 3 feet long with a width and height suitable for the diameter of the heater. Grooved racks are attached to the frames, opposite to each other and about 6″ apart. The racks have ½″ slots about 1″ apart which hold the ½″ aluminum rods that are used to support the tubes while vulcanizing. Another rod of the same length and diameter is used as a weight in each tube. Being extended between these two ½″ rods while curing, the finished tubes have an oval or flat formation instead of being perfectly round. A tube of this shape is preferred, of course, for cutting into bands, packing, etc.

Accuracy and uniformity of cure is of the utmost importance. If the tubes were cured too hard, the bands cut from them would not have sufficient elasticity, and if undercured, they would be weak and easily stretch out of size. Steam, boiling water, compressed air and even the vapor cure is in use, but the former is the most general method of curing.

There are two types of machines for cutting the cured tubes into bands. One chops and the other shears the tubes into bands of any desired width. Both are equipped with a pair of fluted rolls which grip the tubes and feed them under the knives. These rolls can be regulated to feed at such a rate that the bands will be of any desired width, from 1/16″ up to 1″ in graduations of 1/32″. The machines are approximately a foot wide and several tubes may be cut at once. Before the bands are sorted for packing (after they have laid a while to sulphur out), they are tumbled in small revolving barrels for a sufficient length of time to give them a uniform appearance.

A Common Solvent for Rubber and Celluloid

HEXALIN IS the abbreviated designation for Cyclohexanol or hexa-hydro-phenol, and is produced by the hydrogenation of pure phenol. It is a neutral water-white liquid and, like all higher alcohols, does not dissolve readily in water. It has a specific gravity of 0.945 (7.9 pounds to the gallon) and boils at 155 to 160 degrees C. Its flash point lies at about 68 degrees C. It will not decolorize on standing, and is very stable even at the boiling point and evaporates without leaving a residue. Like amyl alcohol, Hexalin has a high dissolving capacity for solid and liquid hydrocarbons, fats, oils, resins, waxes and the like.

Cyclohexanol or its conversion products are capable of dissolving both crude and vulcanized rubber, according to E. H. Killheffer of the Newport Chemical Works, Inc. Crude rubber can be wholly or partly dissolved with well-known volatile solvents, such as benzine, benzol, carbon-tetra-chloride, etc., and vulcanized rubber with xylene, aniline, etc., in order to subsequently subject it to further treatment after removing the foreign ingredients and eliminating the solvents. In a number of the solvents the rubber swells up well, but is only partly dissolved. Large quantities of the solvent are consequently required which afterward have to be recovered. On the other hand, some of the solvents have the disadvantage that their solvent power is exerted only at relatively high temperatures.

It has been found that Cyclohexanol and its esters as well as Cyclohexanone exercise a solvent action on rubber both quickly and perfectly and at lower temperatures than is the case with most other solvents. Even where high temperature is worked with, the high boiling point of the Cyclohexanol and the reduced fire risk afford great advantages.

It is well known that the difficulty of making a combination of celluloid and rubber is in the finding of a solvent in which both rubber and celloid are simultaneously soluble. A number of the most common solvents of celluloid, such as acetone and amyl acetate, act as precipitating agents for rubber from its solution, while on the other hand celluloid is entirely insoluble in a number of the rubber solvents, such as carbon-tetra-chloride, carbon disulphide, etc.

It has been found that celluloid can be dissolved in Hexalin and that rubber can also be dissolved in Hexalin and the two solutions afterward combined. If this mixture is then applied to a glass plate, for instance, and the solvent allowed to evaporate, a fine celluloid-rubber film is obtained. It is, of course, possible to make some substitution of solvents as, for instance, Methyl Hexalin in place of Hexalin and various proportions of celluloid and rubber can also be used depending on the result that is desired.

Rubber Growing in Burma

Active propaganda is being carried on by the government of Burma for the opening of large tracts of land for rubber growing. There are now about 25,000 acres of rubber plantations in Burma, of which 10,000 acres are fully bearing. Cheaper and more plentiful labor is one of the prominent claims in the propaganda.

Specifications and Performance Tests for Rubber Goods

Illogical and Arbitrary Purchase Specifications Often Keep Companies from Getting the Right Goods

(The following is part of a paper by J. M. Bierer and C. C. Davis of the Boston Woven Hose and Rubber Company entitled "Specifications for Rubber Goods and the Value of Performance Tests". It was read by Mr. Bierer before a meeting of the Institution of the Rubber Industry in London in May. Unfortunately space does not permit the reproduction of the complete paper and the discussion which followed its presentation, but these paragraphs are believed to cover the most important part of the authors' criticism of a system which has been an increasing source of worry for American rubber manufacturers. The absurdity of some of the purchase specifications has perhaps never been better portrayed.)

CONSIDERING that 75% of all rubber is consumed in the manufacture of motor tires and that most rubber goods are purchased by those having little interest in their manufacture or construction, it is obvious that the purchase of rubber products by specifications is restricted to relatively few consumers. Owing, however, to the importance of such goods, specifications play a very important part in the rubber industry, particularly mechanical rubber goods.

There are two general types of specifications which guarantee the consumer serviceable rubber goods. The first type deals in complete detail with the quality of the raw materials which make up the finished goods and with the construction of these goods, and then requires performance tests as a further safeguard. The second type limits itself to performance tests, and is based on the principle that as long as the goods give staisfactory service their construction should be left to the manufacturer.

To be satisfactory either to the manufacturer or to the consumer, the first type must be written by an expert familiar both with the details of manufacture and with the behavior of the goods in service. Such knowledge is obviously beyond the scope of nearly all consumers, and therefore the second type of specification, that dealing with performance tests alone, is the only type which the consumer is in a position to write. In spite of this, consumers write nondescript specifications which restrict the manufacturer to the production of uneconomical goods that are faulty in construction and which behave badly in service.

In spite of a tendency to copy one another's specifications, and in a few cases to use a common specification, there have been no essential improvements in recent years, and specifications are more faulty to-day than twenty years ago. At that time they guaranteed the consumer as high quality as it was possible to obtain, but they have remained still fundamentally the same, and at present they restrict the manufacturer to such an extent that he cannot give the consumer the benefit of the tremendous improvements in the art of rubber manufacture. The day has, in fact, come when specifications actually prevent the purchase of the most economical and most satisfactory goods. Millions of dollars' worth of rubber goods are purchased annually to specifications which base their requirements on the quality and the behavior of vulcanized rubber of twenty years ago, when organic accelerators and antioxidants were unheard of, when carbon black had never been used, and when abrasion machines, aging tests and other means of duplicating service conditions were unknown.

Specifications have become so absurd that rubber goods may actually be rejected because they do not deteriorate. One of the largest railroad systems in America requires that the tube of its steam hose shall, when new, elongate between 200 and 400% at rupture. After digesting 48 hours in steam at 45 lb. per sq. in., the tube must elongate between 100 and 300%. The best hose possible to manufacture, which does not deteriorate at all during steaming, has been rejected because the tube elongated 375% both before and after steaming. It would almost appear that the specification department of this railroad desires poor steam hose, and their inspection department leaves little undone to prevent the acceptance of good steam hose.

Requirements Causing Waste of Money

Among requirements which cause tremendous waste of money to the purchaser are maximum and minimum elongation and tensile strength tests, permanent set tests, oven tests, a minimum rubber content, forbidding the use of reclaimed rubber, a maximum combined and free sulphur, maximum acetone, chloroform and alcoholic caustic alkali extracts, a maximum and minimum ash content and various other unnecessary tests, many of which apply to the construction of the rubber goods.

In requiring a high elongation and tensile strength in a hose tube and cover, the consumer ignores the fact that the rubber is never elongated to any considerable extent nor subjected to any high stress, and he seems not to realize that it is far more important to know whether after a year or two the tube bends without cracking and the cover is not cracked from exposure to air and sunshine. In present specifications, elongation and strength tests not only fail to assure the purchaser of the quality he desires, but usually necessitate his paying higher prices. It would be better to require an elongation of 350% and a tensile strength of 1,000 lb. per sq. in. and then allow 20% deterioration in two years than to require 500% elongation and a tensile strength of 1,600 lb. per. sq. in. and then ignore the aging.

Specifications frequently include a test for *permanent set*. The American Railway Association requires the tube and cover of air-brake hose to be stretched 400%, immediately released, immediately stretched again 400% of its new length, held 10 minutes at this strain and released. Within 30 seconds after this final release, the length must be not over 12½% greater than it was previous to the final stretching and after 10 minutes must

be not over 6¼% greater. A rubber technologist can see no relation between this elaborate test and the behavior of the cover when exposed to sunshine and air.

Manufacturers meet this test by curing their hose to a point which makes it impossible for the hose to age well and there have been tens of millions of feet of air-brake hose manufactured in the United States which have been overcured simply to obtain the permanent set required in the specification. As a result the hose has deteriorated more rapidly than the cost and type of compounds warrant, and most hose is removed from service because of the cover cracking and not because the hose has become unserviceable in any other way. This may seem an astounding fact, but it was verified in a recent examination of 11,000 lengths of air-brake hose which had been replaced.

Chemical tests originated in the earlier days when every softener and every low grade rubber was assumed to be injurious, but even at the present time chemical tests of the most unreasonable kind frequently appear.

The most important specifications with chemical tests are those of fire hose. The specification of the National Board of Fire Underwriters requires that fire hose shall contain not over 4% total acetone extract, not over 2% chloroform extract after the acetone extraction, not over 1½% alcoholic potash extract after the chloroform extract, not over 4% total sulphur, not over 1¼% free sulphur, between 50 and 57% ash, and the sum of all these except the free sulphur not over 67%.

Chemical Restrictions Are Ill-Advised

Nevertheless, a fire hose tube has been made which purposely violates these chemical requirements individually and collectively, and yet makes better fire hose. This is illustrated by the following fire hose compounds:—

The first tube (A) is characteristic of hose used for many years by some of the largest of the fire hose manufacturers, and it passes the chemical tests in every detail. The second tube (B) cannot be used in the National Fire Underwriters' specification hose because it violates every chemical test. Tests of actual fire hose constructed with these tubes are given below, the data representing the per cent ultimate elongation and the tensile strength in lbs. per. sq. in.:

Comparative Fire Hose Compounds

A.		B.	
Smoked sheets	44	Smoked Sheets	35
Sulphur	2	Tire caustic reclaim	10
Litharge	10	Sulphur	2¼
Zinc oxide	30	Ethylideneaniline	⅝
Whiting	14	White substitute	2
		Mineral rubber	10
		Zinc oxide	20
		Lithopone	20⅜
	100		100

		A.		B.
When new —	Elongation	580		620
	Tensile	2590		2440
After 2 years —	Elongation	420		570
	Tensile	1640		2160
After 4 years —	Elongation	150		460
	Tensile	940		1730

The aging of the compound containing reclaimed rubber and without the uneconomical litharge is much superior to that of the litharge compound, and could have been rendered still better by the use of an antioxidant.

This example is typical of many where it is advantageous to purchase rubber goods which violate specifications. They are usually better in quality and more economical.

The purchaser wastes tremendous sums of money when he requires that his rubber goods shall contain a minimum percentage of rubber. The United States Government, a notable offender, requires of some of its goods a minimum of 75% rubber by volume, with no specific reference to other ingredients. Provided a compound contains at least 75% by volume of rubber, it may contain a large amount of litharge, be badly overcured, and deteriorate rapidly, yet be perfectly acceptable. On the other hand, a compound more scientifically compounded, with an organic accelerator, with carbon black to increase its resilient energy, with an antioxidant to increase its span of life, and with better physical properties before and after aging, will be rejected because it contains only 68% rubber.

The most resistant and longest lived compound which has yet been developed for piano tubing is one which contains only 27½% rubber by weight. This compound will last for many years without cracking and though lasting four times as long as most fire hose, costs only three-quarters as much as rubber tube in fire hose.

Use of Reclaims Unjustly Prohibited

Nearly all the specifications dealing with the highest quality of rubber goods prohibit the use of reclaimed rubber. This unnecessary restriction means so much from an economic point of view that it deserves special comment. At one time it was generally thought that reclaimed rubber, though very useful in cheap rubber compounds, was disastrous in high grade ones, and that when the latter contained even a small proportion of reclaimed rubber they were poorer than similar compounds containing none. It has, however, been proved in recent years by rubber technologists that the judicious use of reclaimed rubber in high grade compounds does not impair the quality, and we have recently published quantitative data * to show that the use of reclaimed rubber allows the production of rubber products which are as good quality and which age as well as similar compounds containing only new rubber, and at times are of better qualtiy than those containing no reclaimed rubber. These laboratory tests of tire tread compounds have since been confirmed by road tests, so that there is no longer any doubt of the advantage of reclaimed rubber.

Reclaimed rubber was not used in increased quantities the past two years in retaliation for the high price of rubber, but because the unusual price of rubber awoke the more backward manufacturers to the advantages of reclaimed rubber. Tires in America are running farther than ever before, and the fact that they contain reclaimed rubber means that the latter has become established as a beneficial ingredient in rubber compounds subjected to the most severe wear. It is not to be expected that the same quality will be maintained if part of the new rubber is replaced by the same weight of reclaimed rubber. On the other hand, partial replacement of new rubber by a larger amount of reclaimed rubber, with proper alterations of the other ingredients, does not impair the quality for many uses. Of course the quality of reclaimed rubber governs the amount which may be used, but in compounds such as tire treads the resistance to abrasion is not impaired when as high as 10% of new rubber is replaced by the proper amount of reclaimed rubber.

The question is no longer, whether reclaimed rubber

* See Ind. Eng. Chemistry, Vol. 18, page 348 (1926); or The Rubber Age, Vol. 19, page 22 (Apr. 10, 1926).

is a desirable ingredient in tires and other products, but why it is beneficial, why it may even increase the resistance to abrasion.

One explanation of this increase may be illustrated by analogy. A paste of zinc oxide or other pigment is made with kerosene, turpentine, xylene or other suitable liquid, so that the paste can be kneaded without either flowing or crumbling. A very small proportion (2% by weight of the zinc oxide) of acetone extract of reclaimed rubber is added to the paste, whereupon by rubbing, the latter immediately becomes thin enough to pour.

It is possible that there are substances in reclaimed rubber which have a very powerful dispersing action in this way, and therefore the addition of reclaimed rubber to a high-grade compound wets the pigments better, increases their dispersion and thus improves the quality of the compound.

Our reason for dealing at length with the subject of reclaimed rubber is because of its importance in connection with specifications. There are many rubber compounds, in fact nearly all those used in specification goods, where the desired quality can be obtained either by new rubber alone or by a mixture of new and reclaimed rubber. Specifications which prohibit reclaimed rubber of any kind under any conditions make impossible the production of specification goods in the most economical manner. Since rubber goods containing reclaimed rubber will meet all service conditions in just as satisfactory a manner as goods containing new rubber alone, and at a lower cost, it is indeed unfortunate that large consumers, such as the United States Government, fail to recognise the proper place of reclaimed rubber in specification goods.

The Loss Caused by Faulty Specifications

In the preceding discussion a great deal of space has been devoted to air-brake and fire hose specifications. These were selected not because they are exceptionally bad, but because they are used so extensively and because so many people are familiar with them. To appreciate to the fullest extent the loss caused by these specifications the following facts are presented.

American consumers purchase $2,200,000 worth of fire hose each year by specifications. This hose could be manufactured for 10% less cost and yet contain rubber compounds which would last twice as long. The annual saving would probably be at least $750,000.

The railroads of America purchased $2,950,000 worth of air-brake hose in 1926. If their specifications had not prevented it, a more properly balanced type of hose giving better service and aging far better could have been manufactured at so much lower cost that the railroads would have saved at least $1,500,000 the past year.

This same air-brake hose now costs 15% more than it did in 1914, and yet it is of the same quality. On the other hand, automobile tires cost only 40% as much as they did in 1914, but have improved so much that they give three times the service. Therefore the railroads, with their self-satisfied specification engineers and inspectors, are receiving 15% less for their money than they did in 1914, while the consumer of tires, who has placed his faith in the manufacturer, is receiving 7½ times as much as he did in 1914.

The savings which could be made on other specification goods are proportionately large, and it is conservatively estimated that consumers who purchase mechanical rubber goods by specifications are paying 50% more for the service which they receive than the consumers who are deriving the benefit of developments in the art of rubber manufacture and purchase their goods on a basis of the service rendered.

The purchase of rubber goods by specifications at the present day is faulty in two respects, first, because the specifications themselves are fundamentally wrong in the materials and construction which they require, and secondly because the specification and inspection departments of the consumers are too unfamiliar with rubber and too autocratic to interpret liberally any type of specification. Where specifications should be solely a means to an end, they are regarded at present as an end in themselves, and the fact that they fail in their object, i.e., the purchase of the most economical goods in service, is sufficient evidence that they are fundamentally wrong.

Purchasers Must Change Their Attitude

The need for performance tests is obvious, but if such tests are merely added to present specifications the situation will be aggravated, for the consumer will continue to pay a premium for his inferior goods and will doubtless misuse and misinterpret performance tests as he does his present tests. There is little hope of specifications being revised until the executives who control the specification and inspection departments insist upon having a personnel with technical training in the performance of rubber goods, and with more interest in obtaining economical goods.

The present misuse of specifications is not only highly regrettable, but is also inexcusable, and is directly chargeable to three guilty parties. In the order in which they must share this guilt stand the manufacturers, the specification departments of the consumers, and the higher executives over these departments.

Manufacturers of mechanical rubber goods have known for a long time that specifications were defeating their purpose, and they have been guilty as a group in not presenting this fact in a forcible manner to the executives of the organizations using these goods, more particularly the high executives of the various railroads.

The manufacturers have been guilty from another point of view, in that they have continued to sell goods by specifications which they know are faulty, and have tolerated inspection departments which refuse to work on an equitable basis. This toleration has been encouraged by the shortsightedness of certain manufacturers who feel that if they do not furnish the goods requested, some other manufacturer will do so. This reasoning is unsound because if a few prominent manufacturers were to adopt a firmer attitude toward these absurd specifications, the situation would soon improve.

The principal charge against the specification and inspection departments of the consumers is that they know little or nothing about the manufacture of mechanical rubber goods and their behavior in service. This lack of knowledge is not surprising when it is considered that rubber is only a very small part of their purchases and that they cannot be experts on everything. They are, however, unfair to their own organizations and unfair to the rubber industry when they write specifications on a subject about which they know little and in which the art of manufacture is developing too rapidly for them to follow. There is a reason for their lack of knowledge, but there is no excuse for their autocratic attitude.

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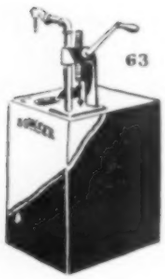

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A New Rubber Softener

THERE HAS recently been introduced a new rubber softener called Dispersol which is claimed to contain a number of tried and proven softeners in addition to a powerful organic dispersing agent. This new softener contains no rosin, rosin oil or other readily oxidizable or deleterious substances and is said to augment the reinforcing power of carbon black.

According to the manufacturers, a common reason for using softeners is to assist in making rubber plastic so as to save time and energy. Some soft grades of rubber can be used to this end but they introduce variables hard to control. Asphalts, oils, rosins and waxes are used but the producers of Dispersol claim that if enough of such softeners are added to a batch to accomplish the plasticising result, the finished vulcanized product is likely to be too soft and "logy" and to lack good aging properties.

The purpose of softeners in general is to make the rubber go further, to enable it to hold more compounding ingredients and to aid in the dispersion of these ingredients. In addition, softeners insure a homogeneous stock and a uniform dispersion of accelerators. Softeners also permit mixing and calendering at low temperatures, thus helping to prevent scorching. Other reasons for the use of softeners are to lubricate the forcing of rubber through dies in tubing machines, to keep the compound plastic until vulcanized and to permit the use of more reclaimed rubber.

In announcing Dispersol, the makers state that it is of general utility and can be used up to 20% of the rubber without fear of irregular or varying results. The following merits are claimed for the new softener: Displaces all soft grades of rubber; produces, with lower power consumption, a homogeneous stock, which holds the maximum amount of compounding powders; fluxes reclaimed rubber; allows mixing at low temperature and hence use of accelerators without scorching; keeps stock soft so it can be calendered or tubed without excessive warming up; does not produce a soft or "logy" product; acts like an antioxidant and produces goods which age well; increases capacity of plant.

Rayon as a Tire Fabric

THE POSSIBILITY of using rayon or artificial silk as a tire fabric, which was discussed last year in THE RUBBER AGE[1], seems to have not been forgotten altogther although it was stressed at that time that there were serious disadvantages to be overcome before such use could be considered entirely practical. One method which has been tried is using rayon in combination with other fibres.

The Dunlop Rubber Co., Ltd., Birmingham, England, has taken out British Patent No. 262,256 on the use of rayon and ramie yarns for tire fabrics. The inventors are W. H. Paull and R. Truesdale who have become well-known in connection with technical developments at the big British factory. Their principal claim in Patent No. 262,256 is stated as follows:

"Yarns for use in the casings of pneumatic tires are produced by mixing ramie or rhea fibre with artificial silk fibre in suitable proportions and spinning them together; or strands of ramie fibre may be twisted together with strands of artificial silk. *Yarns containing 75 per cent artificial silk are preferred.*"

[1] See THE RUBBER AGE, Vol. 19, Page 185 (June 10, 1926); also, in the same volume, Page 492 (Sept. 10, 1926).

World's Rubber Shipments

The world's total shipments of rubber for 1927, up to the end of March, amounted to 163,360 tons, or an increase of 10,726 tons as compared with the same period of 1926. The shipments of plantation rubber amounted to 151,988 tons, which is an increase of 10,873 tons over the corresponding period of 1926, while shipments of wild and Brazilian rubber amounted to 11,372 tons, a reduction of 147 tons from last year.

U. S. Leads in Export Tire Trade

Remarkable Increase in Shipments During the First Quarter of 1927 Puts This Country Ahead of France in the World Fight for Markets

MORE THAN 2,000,000 automobile casings were exported from the four principal casing manufacturing countries of the world during the first three months of 1927—an increase of more than 50% over the corresponding quarter of 1926. These four countries are the United States, France, the United Kingdom and Canada. Statistics for Italy and other tire manufacturing countries are not available for the first three months of the current year, but they are not entirely essential to a study of the world trade in tires since the four countries named supplied about 80% of the casing trade last year.

Having secured 33% of the total tire trade during the first quarter of this year, the United States has taken the lead from France which is now in second place with 31%. Canada supplied 23% and the United Kindgom 13%. This shift of position between France and the United States was practically the only change; the Canadian share is only slightly increased and that of the United Kingdom is the same.

The outstanding reason for this change of position is the increasing popularity of American type-casings. American makers have always held a superiority in the construction of straight-side casings, and with the advent of the balloon casing, which is essentially straight-side, the shifts in favor of American makers have become more pronounced.

French and British Have Advantages

Certain countries have natural trade advantages in particular marketing areas, and in the past this has been more or less true in the exportation of tires. France and the United Kingdom, because of their geographical proximity and similarity of conditions, have held a natural advantage over American makes in European sales. However, the American and Canadian share of the trade in European markets in the first quarter of 1927 very nearly approached that of the French and British combined. French and British exports increased at a more rapid rate in the Americas, particularly South America, than did United States shipment, but the leading position in this region is still retained by United States goods. Even in South America, where French and British competition is the strongest, United States casing exports are far in the lead.

In the three other regions of the world, competition still continues—United States exports lead in Asia and Canadian in Oceania, but French lead in Africa. The accompanying table shows the comparative number of casings exported by the United States, France, the United Kingdom and Canada in the first quarters of 1926 and 1927, with their regions of destination.

Although the acquisition of new markets helps explain the increased export business of American concerns in the first quarter of 1927, there are underlying causes for the general increase which was also shared by French and British exporters.

Increased automotive registrations in 1925 and 1926 are just now causing increases in tire replacements. Replacement had been delayed by the superior wearing quality of cord casings, used as original equipment of the 1925 and 1926 cars, over the fabric casings formerly used.

Another factor in the general increase was the declining price in export markets. Purchases on a declining price market had been cautious, causing sales to be slow. Bad weather in some important markets had had an unfavorable price effect. During the period of higher prices which immediately preceded this time the public abroad as well as in the United States had learned to take better care of their casings. These factors delayed replacement.

The demand for cord casings started to come in strongly for replacement late in 1926, and casing exports took a responsive upward turn. This trend continued and increased during the first quarter of 1927.

Increased stocks caused by higher tariff rates or by taking advantage of the favorable price market added their effect to the export activity.

The general gain in total exports of automobile casings was more than 50%. In Asia and the Americas the gain was higher than average, and in Europe it was slightly below average. The gains in Africa and Oceania were about half the average.

Exports of Automobile Casings from Principal Manufacturing Countries, *First Quarters of* 1926 *and* 1927

Shipped from:—	To Europe	To the Americas	To Asia	To Oceania	To Africa	Total
United States						
1926	114,532	186,075	87,189	21,517	8,974	418,287
1927	241,253	274,047	141,924	35,737	13,613	706,574
France						
1926	332,609	40,056	51,980	5,617	64,240	494,502
1927	372,640	118,260	87,165	17,590	59,385	655,040
Canada						
1926	84,940	91,113	52,023	53,848	23,893	305,817
1927	184,188	117,199	106,721	51,976	38,338	498,422
United Kingdom						
1926	49,640	32,143	49,144	32,683	27,485	191,095
1927	59,888	67,309	72,732	36,659	46,536	283,124

[1] Number estimated from reported weight.

U. S. and Canada Gain More Than Average

The general gains registered by the United States—69%, and Canada—63%, were higher than the average. This excellent position is accounted for by exceptionally strong gains made by both countries in Europe and Africa, stronger than average gains by Canada in Asia and by the United States in Oceania. In the Americas the United States and Canadian gains were both below the average, but American exports to American countries are still far in the lead.

Although the general gains registered by both British and French exports were below average, each made above-average gains in two regions—the United Kingdom in the Americas and Africa, and France in the Americas and Oceania.

The gains made by the United States were more general than for other countries. In no regional market was the gain made by United States exports largest, but our average gain for all markets was the highest. Consistent increases placed our general gain at the head.

[1] Data prepared by the Rubber Division, Department of Commerce.

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RECLAIMED RUBBER

[*A Series of Articles on Its History Development - Manufacture - Uses*]

BY
C. E. Bishop
Consulting Engineer
on Reclaimed Rubber

PART V

A Review of Rubber Reclaiming Processes

A Few Fundamental Ideas Provide the Foundation for All the Numerous Patents Which Have Been Taken Out

A REVIEW of the patents that have been granted on processes for reclaiming rubber from 1855 to the present day is very interesting and instructive. As Weber states, there is every evidence that "all or nearly all men have approached the problem with the idea that he will be able to find a process whereby the original hydrocarbon will be found again in a form capable of the same degree of vulcanization that it possessed before it entered a rubber compound; in fact, he tries to split off the sulphur atoms in the vulcanized molecule and thus go back to the unsaturated hydrocarbon."

This is represented as the reverse of the action which took place during vulcanization and is called devulcanization. As mentioned in a previous article of this series, this is the objective of every rubber reclaimer today. That it has never been accomplished, at least not in a commercial way, is evidenced by the fact that there is no reclaim on the market today which is entirely free of sulphur.

Only Important Patents Discussed

In this review of the patents which have been granted on reclaiming processes, of which there are 137 up to this date, including renewals, we will be able to discuss only those that appear to be of major importance. The reader's attention is called to the fact that practically all of them incorporate softeners of some kind to assist in plasticising and many of them claim that sulphur is completely extracted.

In 1855 Sigismund Beer took out a patent for an improved method of devulcanizing India Rubber. In his process the scrap rubber was ground to a finely divided state, then boiled in an alkaline lye, then washed and dried and afterward was given a second boiling in alkaline lye to which was added spirits of turpentine. This process was to be continued for a greater or less time. The operation was to be repeated until the sulphur was fully extracted and the product had suitable tackiness. In case it became too tacky he introduced *alcohol* or *sulphur* into the solution.

In 1857, two years later, a process was patented by Conrad Poppenhusen and Ludwig Held. In their process they cut old rubber into the *smallest possible particles* and immersed them in a suitable vessel containing a volatile liquid such as benzol, naptha, sulphuric ether, sulphurent of carbon or oil of turpentine. The latter was considered the most economical solvent. Into the mass, so treated, was introduced dry ammoniacal gas. The gas was absorbed and the mass swelled, the whole becoming viscid. The material was then to be stored where the excess solvent could evaporate into the air until the right degree of consistency or plasticity was obtained. The material was then ready to be used in new compounds.

In 1858 one of the oldest methods of reclaiming rubber was presented by Hiram Hall. In this process the vulcanized rubber was boiled in water until the finely divided particles became semi-plastic and amalgamated. It could then be used in new compounds again.

In 1860 Edward Simon patented a process in which he subjected 100 parts of shredded waste rubber and two parts of chloride of lime to an open heat at a temperature of 1,000 to 1,100 degrees Fahr. The rubber melted and during constant stirring the sulphur was distilled out. By this method the value of the rubber was destroyed in the effort to remove the sulphur for the resultant mass was nothing more than a dead, inert filler.

In 1861, one year later, John Murphy was granted a patent for the reclaiming of rubber whereby the old rubber was mixed with sulphur and vulcanized until it formed hard stock. This was then reduced to a powder and mixed with unvulcanized gum. The compound of new and old rubber was then formed into the desired shape and vulcanized. This was indeed a peculiar manner in which to use waste rubber.

In the same year a patent was obtained by Charles McBurney which covered the method of mixing old vulcanized rubber, which had been reduced to a fine state, with oils like pine or rosin oil, cotton-seed, olive, castor, palm or cocoanut oil, and allowing it to stand several hours after which crude rubber and necessary fillers were added. The material was then to be mixed on a mill and formed into the desired products for vulcanization.

Proposes Use of Vegetable or Pine Oil

Thomas J. Mayall proposed a process in 1862 wherein vulcanized rubber waste might be rendered fit for use again. The steps in this process were: The vulcanized waste was ground to a fine state; there was then added to it an equivalent quantity of either a vegetable or pine oil; this mass was then mixed thoroughly on a mill and subjected to gentle heat.

In the next year (1863) Alfred Ford patented a process in England in which old rubber was boiled in a strong solution of alkali. The material was then ground to a powder, placed in molds, subjected to hydraulic pressure and heated to a degree of vulcanization. The whole was thereby agglutinated. In 1863 a patent was granted Charles H. Hayward on a process which is known today as the acid process.

In 1871 H. Smyser took out a patent for the use of old rubber by simply reducing it to a fine powder on a grindstone and then using this dust in a new compound as a filler. We know this material today as *Springs*.

In 1881 N. C. Mitchell defended by patent what are known as acid processes. He reduced the rubber scrap to a fine state of division and then placed it in a tight steam box in which a pressure of 50 to 75 pounds could be maintained. He used a solution made of either sulphuric or muriatic acid, of varying strength, depending upon the grade of scrap to be treated. The steam box was then hermetically sealed and steam turned in from one to five hours. The rubber was then removed,

washed and dried. This treatment removes the textile material as well as some of the mineral filler.

McDermott in 1882, the next year, modified the Mitchell acid process by adding with the acid and rubber some manganese dioxide and a solution of potassium bichromate. Then he subjected the whole to steam under pressure, the result being practically the same as with the Mitchell process.

In 1884 J. J. Montgomery subjected waste rubber to the action of one of the petroleum hydrocarbons with a boiling point around 400 to 450 degrees Fahr. The mass was boiled in this oil at 350 degrees Fahr. The rubber then became a doughy or very plastic mass from which the oils were removed by heat.

The patent granted A. H. Marcks in 1899 covered what is known today as the alkali process. By this method the ground rubber waste is cooked in a vessel at a temperature of from 344 to 370 degrees Fahr. in a three per cent solution of caustic soda, and after about twenty hours the process is completed. The rubber is then washed and dried. By this process, properly controlled, the free sulphur is removed, and also some lead and like fillers.

In 1900 a modification of the Marcks patent was granted which covered the use of a rotating cylinder. It was claimed that this mixed the material better and resulted in a better solution during the treatment with heat.

In 1900 Johan Thulgaard was granted a patent for reclaiming waste rubber with the use of potassium cyanide but, being extremely hazardous, it was never practiced to any extent.

Patents First Straining Machine

In the same year Robert Cowan patented a machine for removing foreign matter from waste rubber. Up to this time material like nails, leather strings and wood had been removed largely by washing. This machine was known as a *strainer*. Being fed into the machine, which by means of a jacket was heated by steam, the rubber became plastic after which it was forced by a worm through the strainer discs which retained the solid particles but allowed the rubber to pass. A machine of this principle, but greatly improved, is generally used today for removing all foreign matter not removed by magnets or in the washing operation.

In 1900 G. S. Keller patented what is termed the Electric Reclaiming Process. The rubber is first ground fine and then charged into a large metal cylinder, which may be stationary with agitator paddles on the inside or it may be of a rotating type. Around the container is placed a band which is connected to one of the poles of a generator and into the center of the cylinder projects the opposite pole from the generator.

The rubber is then placed in the cylinder with a solution of sodium hydroxide and some ferric sulphate. The container is then closed and the contents heated to from 330 to 370 degrees Fahr. Then while it is agitated an electric current flows constantly through this electrolyte. The process required from ten to twenty-four hours after which the rubber is removed, washed and dried. In many respects the final product resembles that obtained by the alkali process.

In 1915 Orrin A. Wheeler patented a process whereby finely ground scrap rubber is immersed in a strong solution of alkali and allowed to stand in a cool place for several hours. The material is then placed in a digestor, and carbon disulphide, a pound more or less, is added. Then the digestor is hermetically sealed. The material is mechanically agitated while under heat from one to five hours, allowing a chemical reaction to occur. There occurs a combination of sulphur and the cellulose, producing cellulose xanthogenate. On completion of this reaction, the rubber and fibre has been converted into a sticky, cohesive mass. Next, water is added which mixes with the cellulose to distend it; then it is again heated at a low temperature for from fifteen to twenty hours, being agitated continuously.

The inventor claims that by this process the cotton fibre that is usually destroyed in other processes is permitted to remain with the rubber, becoming a valuable ingredient in both soft and hard rubber compounds. It is also claimed that the rubber and the tenacious cellulose unite and intermingle so that an article made therefrom will possess the toughness and wearing qualities of new or pure rubber. Also, due to the presence of this cellulose, a greater yield is obtained and, therefore, a lower manufacturing cost.

In the foregoing review we have mentioned only a few of the patented processes for reclaiming rubber, and only the types involving new principles. When a careful survey is made of these and all other methods that have been suggested it will be apparent that to date there are but two major methods, i.e. *acid* and *alkali*, with their variations as to time, temperature, and strength of solutions, and one other which can be termed the *acid-alkali* or double process.

As mentioned previously, practically all the processes involve the use of some kind of oil to assist in plasticizing. Several make provisions to add sulphur or other ingredients when the rubber produced is too soft. This would be ridiculous if it wasn't so serious for in this day of vulcanization accelerators it would be, to say the least, inadvisable to use in many compounds a reclaim that is highly laden with sulphur.

In fact we know that it is highly important today to reduce the alkalinity in reclaimed rubber to no more than one-tenth of one per cent in order to avoid the acceleration of cure caused by the presence of this agent in excess quantities.

There are very few reclaims of any merit on the market today which were produced from vulcanized scrap by the acid process. The finished product under such conditions oxidizes and deteriorates more rapidly than reclaim produced by the alkali process. However, acid is used to great advantage in reclaiming unvulcanized material, such as tire trimmings. As in the case of the most modern alkali process used on cured rubber scrap, a careful consideration must be given the problem of proper machines, acid proof equipment, their layout and process methods in order to produce the best quality at a minimum cost.

Within the last few years much development work has been done on rubber floor tile and substitutes for linoleum. These products have consumed great quantities of uncured waste rubber, using both the rubber and cotton fibre, properly blended and compounded. During this period, with this new market found for this kind of material, there has been but little demand for uncured rubber reclaims, due to the finished cost being prohibitively high.

However, there are several extremely good friction reclaims on the market, and at this time with crude selling at around 40 cents, these reclaims are very advantageously used and reclaimers find a ready market for those that test high and uniform. The quality desired can be obtained if selected material of each kind is used and care is exercised in controlling the process throughout.

[*Editor's Note: In the next issue, which will be the last of this series, Mr. Bishop will offer several interesting tables pertaining to the separation and weights of tire parts, and will make some suggestions for establishing standards for the staple lines of reclaimed rubber now offered to the trade.*]

How Big British Rubber Works Started

In an historical survey of the India Rubber, Gutta Percha, and Telegraph Works Co., Ltd., of Silvertown, London, it has been recalled that this organization came into being in 1852 when S. W. Silver & Co., London haberdashers, moved their waterproofing works from Greenwich to some land between Bow Creek and Barking Creek. The business expanded enormously, and in 1864 a prospectus was issued for the formation of a limited company.

The works at Silvertown now occupy over 17 acres, with excellent facilities for transportation, embracing a wharf with a frontage of 860 feet. Between 4,000 and 5,000 workpeople are employed at Silvertown, while another 800 are engaged at Persan, Seine-et-Oise, France. The concern's organization now embraces the following departments: rubber, gutta percha, ebonite, electrical equipment, submarine-telegraph cable shops and general section embracing engineers', carpenters', fitters', smiths', tinsmiths', and plumbers' workshops.

The London Letter

The GENTLEMAN FROM MINCING LANE will report current opinion in London's famous rubber market in every issue of THE RUBBER AGE

This Week the Gentleman Talks About the Silver Lining.

LONDON, May 25, 1927

AT THE present moment sentiment in Mincing Lane rubber circles has brightened up somewhat as a result of a combination of factors, the most important of which are enumerated below:—

(1) The optimistic views on the position expounded at recent plantation company meetings by some of the leading producers. In particular, Mr. H. J. Welch's statement at the meeting of the Rubber Plantation Investment Trust, which is dealt with below, was construed in a bullish light.

(2) The cut in the exportable allowance from Malaya and Ceylon to the minimum rate of 60%, indicating an early reduction in supplies.

(3) Two consecutive weekly declines in London stocks aggregating 1,419 tons. In recent months there have been isolated instances of a casual weekly drop in the stock figure due to extraneous circumstances, but the present occasion is the first on which these reductions have extended beyond a week, since the General Strike period of a year ago when transport conditions, of course, were disorganised.

(4) Evidence of an improvement in the requirements of the United States, the United Kingdom and the leading Continental countries. Under the latter heading Germany, in particular, shows rapid strides in the first quarter, deliveries to manufacturers during this period having been 9,200 tons or practically trebled in comparison with the corresponding period of 1926. Russia also has been a bigger buyer, taking practically double her 1926 requirements from London in the first four months of 1927. The British manufacturers have taken 16,330 tons by the end of April, in contrast with 13,449 tons in the January-April period of 1926.

All these factors have combined to impart a more cheerful complexion to the general position and outlook, and although so far there has been no violent change in the price of the raw material nor any noticeable accession of business, comparatively little further encouragement would presumably be needed to put the price on a much higher basis.

TURNING NOW to the recent annual meeting of the Rubber Plantations Investment Trust, Mr. H. J. Welch, who is well-known on this side as the chairman of this company and as a leading member of the Harrisons & Crosfield group, estimated that, judging from the experience of the first quarter, the United States absorption of rubber in 1927 will exceed 400,000 tons, with requirements for the rest of the world certainly exceeding 200,000 tons and perhaps reaching 220,000 tons if the present rate of imports is maintained. In his view, therefore, the world this year will consume perhaps 620,000 tons of rubber—a figure considerably in excess of the estimates on your side of the Atlantic, but in many responsible quarters here regarded as by no means excessive.

Taking these figures as a guide, Mr. Welch estimated that the potential production during the current year, after allowing for possible increases in the non-restricting countries, will not be sufficient to provide for market absorption, even supposing that the percentage of export from Malaya and Ceylon should rise to 70% during the November 1927-January 1928 quarter. To attain this end, of course, it would be necessary for the commodity to average over 2s. per lb. during the coming August-October period.

Total world's stocks today, in Mr. Welch's opinion, represent the equivalent of about five months' consumption, and any serious reduction in this reserve by the end of the year, coupled with the fact that a low exportable percentage may then be in force, will probably bring about somewhat uncomfortable conditions—from the standpoint of the manufacturer—during the first half of 1928. Other well-known members of the Harrisons & Crosfield group have spoken recently in a very similar strain, but as the public announcements of these same gentlemen a year ago gave no indication of the extent of the subsequent slump and the shrinkage in requirements, their present views must not by any means be regarded as fool-proof.

AS A point of interest, it is worth remarking that Mr. Welch considers that 10,000 tons of the outstanding "unused coupons"—that is 6,000 tons in Malaya and 4,000 tons in Ceylon—will be required for the working stocks of dealers in Singapore, Penang and Colombo.

In the first report since its formation as a public company, Morris Motors—easily the largest car manufacturers in this country—shows a surplus of more than $5,000,000. Car production during the year 1926 totalled 48,330, sales overseas recording in advance during the twelve months of approximately 100% on the average for the three preceding years. In respect to the current year, it is reported that the new 1927 models are in very much increased demand, not only in this country, but in all overseas markets, sales and deliveries for the first four months of the year having increased by more than 33⅓ per cent.

Yours Faithfully,

THE GENTLEMAN FROM MINCING LANE

Ethylene Dichloride at Six Cents Per Pound

Increasing Production of New Solvent has Lowered Its Price to Compete With Others in Non-flammable Class

THE PRACTICABILITY of using ethylene dichloride as a rubber solvent[1] is entirely due to the surprising reduction that has been effected in its price. Writing in the last issue of Industrial and Engineering Chemistry, D. H. Killeffer comments on this transition as follows:

Although the original discovery of ethylene dichloride was announced in 1795, no quantities worthy of consideration were to be had in any market before 1923. During that year the first commercial offerings were made at 35 cents per pound in not too great amounts. In 1924 it was possible to reduce this price to 25 cents per pound, and in the spring of 1926 demand has grown and production costs had diminished to the point of allowing a price of 10 cents per pound. In November, 1926, 6 cents per pound was first quoted for ethylene dichloride in tank-car lots. The present situation is such that any practicable demand may be met at this figure.

When ethylene dichloride is scarce and costs 35 cents or more per pound, industries are interested in the fact that it is a good solvent for oils, fats and waxes. Carbon tetrachloride, if not identical with it as a solvent, is too nearly so to justify the difference between 7 and 35 cents per pound. However, ethylene dichloride becomes a serious competitor when its price goes down to 6 cents per pound. As a matter of fact, solvents are bought and used on a volume rather than a weight basis and the difference between the specific gravities of these two is such that ethylene dichloride at 6 cents per pound becomes the practical equivalent of carbon tetrachloride at 4.75 cents per pound, other things being equal. On a similar volumetric basis of comparison, ethylene dichloride is equivalent to trichloroethylene at 5.27 cents per pound and acetylene tetrachloride at 4.65 cents per pound, whereas the present prices of these two are 10.5 and 11.5 cents per pound, respectively.

Thus a sharp reduction in the price of ethylene dichloride is the practical equivalent of the introduction of a new solvent. Its valuable properties have become commercially important because they are now to be had cheaper than in similar materials. In a plant which loses, say, one hundred gallons of its solvent per week through unavoidable evaporation, etc., the difference in cost between ethylene dichloride and its nearest non-flammable competitor is now considerable. On the supposition of similar losses the saving effected by using the cheaper would amount to about $30 per week, which is equivalent to the normal income from about $26,000. This sum seems large but is not at all out of line and gives a definite idea of the great value to a chemical plant of carefully following fiscal as well as scientific developments.

[1] See THE RUBBER AGE, April 10, 1927, p. 32.

The Nature of Rubber Latex Particles *

Rubber itself is a hydro-carbon: a polymerization product, in a natural rubber, of isoprene (C_5H_8). The latex particle is not homogeneous, however. Fig. 1 is a microscopic enlargement of particles from the commonest form of rubber latex, that from the Hevea grown on the plantations. Many of the particles are pear-shaped or have tails, and this is evidence that the hydrocarbon is in a solid or semi-solid state, since, if it were in a liquid state, surface tension would pull it into spheres. Recent investigations have shown that the inside of the rubber particle is in a much less solid condition, and is possibly liquid, while the outer hydrocarbon is solidified.

Fig. 2 is a diagrammatic cross-section of the Hevea particle. Outside of the rubber shell is a skin or film of closely adhering proteins, roughly analogous to albumin or casein. Recent work in the Goodyear laboratories has shown that this protein probably is held to the rubber simply as a layer about one molecule thick. Evidence also exists that the film is not absolutely continuous but rather is like a net stretched round a balloon. This film is of great importance in the technology of rubber.

When the latex particles are coagulated together, the strength of the resultant rubber depends on two factors: (*a*) the aggregation of the rubber particles themselves and (*b*) the nature of the inside of the latex particle. Roughly, the condition resembles somewhat that which determines the strength of metals, in which an assemblage of closely fitting crystalline grains or cells exists. The strength of the metal depends in part upon the relative size and fitting together of these grains and on the properties of the intergranular layer, but also depends very decisively upon the nature of the crystals themselves, that is, the arrangement of the atoms as determined by their chemical character. In this connection it is interesting to notice that recent work with X-rays has shown that in stretched rubber, from whatever source, the hydrocarbon molecules are definitely oriented in what we may call a crystalline or semi-crystalline way.

* By S. E. Sheppard in the S.A.E. Journal.

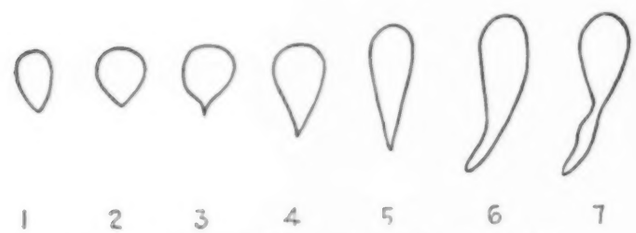

Fig. 1—Microscopic Enlargement of Latex Particles
Many of the Particles from Hevea Braziliensis Are Pear-Shaped or Have Tails, Which Is Evidence that the Hydrocarbon of Which the Particle Is Composed Is in a Solid or Semi-Solid State. Forms 4, 5 and 6 Are Most Common in Latex from the Normal Tapping-Area of the Tree; Forms 1 and 2, in Latex from New Branches, Leaf-Stems and Leaves; and Form 7, from Old Trees or after Certain Treatment of the Latex. Size of the Particles Varies from 0.0005 to 0.0045 Mm. (0.00002 to 0.00018 In.) Long Diameter

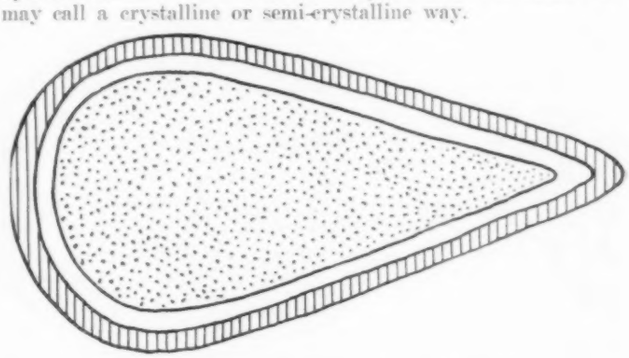

Fig. 2—Diagrammatic Cross-Section of Particle
Outside of the Rubber Shell Is a Skin or Film of Closely Adhering Proteins Which Probably Is Held to the Rubber as a Layer about One Molecule Thick. When the Latex Is Coagulated the Strength of the Rubber Depends upon the Aggregation of the Particles and the Nature of the Latex Particle. X-Rays Show that in Stretched Rubber the Hydrocarbon Molecules Are Definitely Oriented in a Crystalline or Semi-Crystalline Way

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LATE MARKET PRICES

Crude, Scrap & Reclaimed Rubber · Cottons and Fabrics

JUNE 3, 1927

COTTON

CONTINUED nervousness has characterized the cotton market in the last two weeks. No abatement in this condition is expected during the growing season or while the floods present a menace to the cotton states. The market was decidedly irregular, with profit-taking, immediately preceding the three day holiday from May 27 to 31, and with trading resumed on the 31st the same erratic conditions prevailed. December contracts, after selling at 17.46 or 7 points net higher, declined to 17.10 in the late trading and closed at 17.20. Spot closing prices have averaged about 16.50, with a monthly average during May of 16.07. Late market prices follow:

	High	Low	June 3 Close	May 19 Close
July	16.82	16.50	16.59	15.88
October	17.20	16.85	16.95	16.08
December	17.46	17.10	17.20	16.46
Jan.	17.48	17.16	17.24	16.69

Tire Fabrics

There has been comparatively little business placed for tire fabric in the last ten days. The price tendency has been steadily upward, though the companies are reported not to have paid asking prices. All manufacturers are sold up through the third quarter. Late prices follow:

CORD			
Peeler, carded, 23/5/3	lb.	.41 @	.43
Peeler, carded, 28/4/3	lb.	.42½ @	.43½
Peeler, carded, 13/3/3	lb.	.36 @	.39
Peeler, carded, 15/3/3	lb.	.38 @	.39
Egyptian, carded, 23/5/3	lb.	.49 @	.54
Egyptian, combed, 23/5/3	lb.	.54 @	.60
CHAFERS			
Carded American, 8 oz.	lb.	.36 @	.41
Carded American, 10 oz.	lb.	.37 @	.40
Carded American, 12 oz.	lb.	.36½ @	.39
Carded American, 14 oz.	lb.	.36 @	.41
LENO BREAKER			
Carded American, 8¼ oz.	lb.	.37 @	.39
Carded American, 10¼ oz.	lb.	.40 @	.41
SQUARE WOVEN			
Carded American, 17¼ oz. 13-11 ply	lb.	.36½ @	.37½
Carded American, 17¼ oz. 10-5 ply	lb.	.36 @	.37

Sheetings

The demand for sheetings has been confined to small quantities generally. Toward the close of May mills advanced 40-inch 4.25-yard to 7¼c and 40-inch 3.75-yard to 8¼c. A fair quantity of 40-inch 2.85-yard sold at 10c and small lots of 40-inch 2.50-yard at 11¼c. A quantity of 40-inch 4.25-yard brought 7½c on June 1. Recent prices follow:

40-inch 2.50-yard	yd.	.11 @	.11¼
40-inch 2.85-yard	yd.	.10 @	.09¾
40-inch 3.15-yard	yd.	.10⅝ @	.10¾
40-inch 3.60-yard	yd.	.09¼ @	.09¼
40-inch 3.75-yard	yd.	.08¼ @	—
40-inch 4.25-yard	yd.	.07½ @	—

Ducks

In the last week of May the prices for cotton ducks were advanced. The best sold division of the duck market was single filling off grade. A number of mills are sold up tight until August, and a better export demand has latterly been in evidence. Hose and belting duck users have covered their needs amply ever since the basis was under 28c. On June 1 hose and belting was held for 32c a pound but this price was shaded in a few quarters on orders for large quantities.

Belting and Hose	lb.	.31 @	.33
Enameling	lb.	.31 @	.36
Sloe Ducks	lb.	.29½ @	.33½
Single filling	lb.	.13 @	.16
Double filling	lb.	.15½ @	.17

RECLAIMED RUBBER

Reclaimers report active demand from all branches of the rubber industry with the result that their plants are working close to peak production. Rubber factories are continuing their spring spurt with little let-up in sight for this month. Quotations are easy and unchanged.

High Tensile			
Super-Reclaim No. 1 Black	lb.	.17½ @	.18
Super-Reclaim No. 2 Black	lb.	.14½ @	.15
High Tensile Red		.15 @	.15½
Shoe			
Unwashed	lb.	.08¼ @	.08⅝
Washed	lb.	.11 @	.11½
Tube			
No. 1 (Floating)	lb.	.18½ @	.19
No. 2 (Compounded)	lb.	.14 @	.14½
Tires			
Black, washed		.10½ @	.10¾
Black, unwashed		.08½ @	.08¾
Black selected tires	lb.	.09½ @	.10
Dark Gray	lb.	.12¾ @	.13¼
Light Gray	lb.	.13½ @	.14
White	lb.	.15½ @	.16
Truck, Heavy Gravity	lb.	.08½ @	.09
" Light Gravity	lb.	.09 @	.09½
Miscellaneous			
Mechanical Blends	lb.	.08 @	.08½
Red	lb.	.15 @	.15½

SCRAP RUBBER

Scrap business is fairly active with reclaimers coming into the market to replenish their supplies. Dealers' stocks are low for all old accumulations are gone and trading is now in new stocks. Prices are low with several changes noted since our last report.

[Prices to Consumer]

Auto tire peelings	ton	34.00 @	35.00
Standard White auto	ton	50.00 @	52.00
Mixed auto	ton	26.00 @	27.00
Bicycle tires	ton	24.00 @	25.00
Clean solid truck tires	ton	32.00 @	34.00
Boots and shoes	lb.	.01¾ @	.01⅞
Arctics, trimmed	lb.	.01¾ @	.01½
Arctics, untrimmed	lb.	.00⅞ @	.01
Inner tubes, No. 1	lb.	.08¼ @	.08½
Inner tubes, No. 2, compounded		.06¼ @	.06⅜
Inner Tubes, Red	lb.	.06½ @	.06¾
Air Brake Hose	ton	36.00 @	37.00
Rubber Hose	ton	18.00 @	20.00

CRUDE RUBBER

THE market during the last two weeks has been generally steady, with sufficient buying support to maintain price levels. With the close of May the prices kept at the 41c asking basis despite the stagnant condition in nearly all quarters. Spot and May standard deliveries held steadily at 41c. July deliveries, however, were a shade higher at 41½c. Off-grades and lower plantations came in for some attention and No. 3 Amber sold in fair-sized volume at 38c. On June 1 leading tire manufacturers in Akron were contemplating reducing tire prices to dealers as a result of price cuts by Montgomery Ward and Sears, Roebuck & Co.

Plantations—			
Ribbed Smoked Sheets			
Spot	.40⅝ @		.40½
June	.40⅝ @		.40½
July/September	.40¾ @		.41
October/December	.41⅝ @		.42
January/March	.42¾ @		.43¼
First Latex, crepe spot	.40½ @		.40¾
Amber Crepe, No. 2, spot	— @		.38¾
" " No. 3	.37½ @		.37⅝
" " No. 4	— @		.36½
Brown Crepe, Rolled	— @		.35⅝
" " Clean, thin	.37¾ @		.38
" " Specky	— @		.37½
Liquid Latex, per gal.	**1.50**	**@**	**1.75**
Pontianac—			
Bangermassin	Nominal		
Palembang	Nominal		
Prime Pressed	Nominal		
Sarawak	Nominal		
Paras—			
Up-river Fine	.36 @		.36½
" Medium	.29 @		—
" Coarse	.24½ @		.25
Acre Bolivian, fine	.36 @		.36½
Tapajos, fine	.39 @		—
Cut Beni Bolivian, fine	.45 @		—
Caucho Ball—			
Upper, shipment	.25½ @		.26
Centrals—			
Corinto, scrap	.27 @		—
Esmeraldo, sausage	.25 @		.25½
Guayule, washed and dry	— @		.33
Africans—			
Benguela, No. 2	Nominal		
Congo, upper, black	Nominal		
" " red	Nominal		
Balata—			
Block, Columbia	.39½ @		.40½
" Ciudad	.38 @		.38½
Gutta Percha—			
Slak	.. @		..
Red Macassar	3.00 @		—

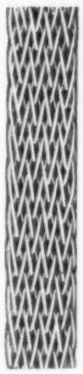
LONDON MARKET

Standard Ribbed Smoked Sheets—*Buyers*			
Spot	19⅝ @		19¾d
June	19⅝ @		19¾
July/Sept.	20 @		20⅛
Oct./Dec.	20½ @		20⅝
Jan./March	21 @		21⅛

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—*Sellers*			
Spot	19½ @		— d
May/June	19½ @		20
July/Sept.	20 @		—

Recent daily closing prices on the Rubber Exchange of New York are shown on the Financial Page in the News Section of this issue. Daily spot prices of Ribbed Smoked Sheets are given in the Statistical Section.



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is necessary for perfect compounding. Where non-blooming stocks of excellent aging qualities are desired, this material gives results

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The Barrett Company

40 Rector Street New York City

June Chemical Shipments Are Large

Leading Factors Report a Continuance of May Conditions Into June with an Excellent Outlook for a Good Month

NEW YORK, June 4, 1927—With an excellent month just past, during which shipments of a large volume of compounding materials were reported, chemical producers have been looking forward to June with some anticipation. Now that it is here, they are gratified to be able to report that May conditions have continued into June and at this early writing it would appear that this month's tonnage will closely approximate that of May. In several quarters a slight letdown in rubber factory production schedules was reported but this movement does not appear to be widespread. One factor which may tend to reduce June tonnage somewhat is the advanced shipments which were made in May but which were originally scheduled for June. This was especially true of carbon black, large shipments of which were made in anticipation of a possible shortage on account of the flood conditions. Prices are generally firm with a few changes noted.

ACCELERATORS

Organic

A-7	lb.	.70 @	.80
A-11	lb.	.75 @	.90
A-16	lb.	.65 @	.85
A-19	lb.	.75 @	.90
Aldehyde ammonia, crystals	lb.	.80 @	.82
Aniline oil, drums	lb.	.17 @	.17½
"BB"	lb.	— @	—
Captax	lb.	— @	—
Crylene	lb.	.70 @	—
paste	lb.	.50 @	—
Di-Ortho-Tolylguanidine	lb.	.85 @	.90
Diphenylguanidine	lb.	.68 @	.72
Ethylidene aniline	lb.	.60 @	.65
Excellerex	lb.	.35 @	.40
Formaldehyde Aniline	lb.	.38 @	.42
Grasselerator 102	lb.	.80 @	.82½
Grasselerator 552	lb.	4.80 @	5.00
Grasselerator 808	lb.	1.15 @	1.35
Heptene	lb.	.55 @	—
Hexamethylene-tetramine	lb.	.80 @	.82½
Lithex	lb.	.18 @	.20
Monex	lb.	3.25 @	—
Paraphenylenediamine	lb.	1.25 @	1.30
Piperidine-Piperidyldithio-Carbamate	lb.	4.80 @	5.00
Quinoidine	lb.	.40 @	—
R & H 50	lb.	.55 @	.60
Super-Sulphur No. 1	lb.	— @	—
Super-Sulphur No. 2	lb.	— @	—
Tensilac, No. 41	lb.	.65 @	.68
Thiocarbanilide, kegs	lb.	.26 @	.28½
Trimene	lb.	.75 @	—
base	lb.	1.20 @	1.35
Triphenylguanidine	lb.	.69 @	.73
Tuads	lb.	— @	—
Vulcone	lb.	.70 @	.74
Z ss	lb.	.75 @	1.00
Z.B.X.	lb.	2.50 @	—
Zimate	lb.	— @	—

Inorganic

Lead, sublimed blue	lb.	.09 @	.09½
Lead, white	lb.	.09 @	.09½
Litharge, domestic	lb.	.11 @	.13
Magnesia, calcined, light	lb.	.06 @	.12
heavy	lb.	.04 @	.04½

COLORS

Blacks (See Compounding Materials)

Blues			
Prussian	lb.	.33 @	.35
Ultramarine	lb.	.08 @	.35
Browns			
Siena, Italian	lb.	.04½ @	.08
Umber, Turkey	lb.	.04½ @	.06
Greens			
Chrome, light	lb.	.27 @	.31
medium	lb.	.29 @	.32
dark	lb.	.31 @	.34
Chromium Oxide, bbl.	lb.	.28 @	.32
Reds			
Antimony crimson, 15/17	lb.	.27 @	—
sulphur free	lb.	.48 @	.50
golden 15/17 F.S.	lb.	.16 @	.22
Indian English	lb.	.08 @	.10
Oximony	lb.	.13¼ @	—
Para toner	lb.	.13 @	.14
Red oxide, reduced	lb.	.10 @	.11
pure	lb.	.14 @	.15
Toluidine toner	lb.	1.75 @	1.85
Venetian red	lb.	.02 @	.06
Vermillion, quicksilver, English	lb.	1.55 @	1.65
Whites			
Lithopone, Akcolith	lb.	.05¾ @	.06
Lithopone, Azolith	lb.	.05½ @	.05¾
Lithopone, Vanolith	lb.	.10½ @	—
Titanox	lb.	.12 @	.12½
Calc. Base Pigment	lb.	.10½ @	.11
Zinc Oxide—American Process			
American Azo:			
ZZZ (lead free)	lb.	.06½ @	.07
ZZ (under 5% leaded	lb.	.06¾ @	.07½
Zinc Oxide—French Process			
White seal	lb.	.11⅞ @	—
Green seal	lb.	.10⅞ @	—
Red seal	lb.	.09⅞ @	—
Yellows			
Chrome	lb.	.17 @	.20
Ocher, French medium	lb.	.03 @	.03¼
domestic	lb.	.01¾ @	.02

COMPOUNDING MATERIALS

Aluminum Flake (f.o.b. plant)	ton	21.85 @	24.50
hydrate light	lb.	.16½ @	.17
Ammonia carbonate	lb.	.13½ @	.14
Are-O-Sel	ton	8.00 @	11.00
Asbestine	ton	14.75 @	18.00
Barium carbonate	ton	50.00 @	52.00
Barium Dust	lb.	.05 @	.06
Barytes southern off-color,	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½ @	—
Blacks			
Arrow "Aerfloted"	lb.	.08 @	.12
Bone Black	lb.	.05½ @	.11
Carbon, compressed	lb.	.07½ @	.11½
" uncompressed	lb.	.07 @	.11
Drop Black	lb.	.06 @	.11
Lamp "	lb.	.12 @	.40
Micronex	lb.	.08 @	.12
Thermatomic carbon	lb.	— @	—
Velvetex carbon	lb.	.04 @	.07
Blanc fixe dry f.o.b. works	lb.	.04 @	—
Carrara filler	lb.	.01¾ @	.02
Catalpo (fact.)	lb.	.02 @	—
Chalk	lb.	.02½ @	.04½
Clay, China, domestic	ton	8.00 @	9.00
Aerfloted Suprex	ton	9.00 @	20.00
Blue Ridge, Dark	ton	— @	—
" " Light	ton	— @	—
Dixie	ton	— @	—
Langford	ton	— @	—
Mineral Flour, c. l. fob mine	ton	20.00 @	23.00
Tensulite		15.00 @	—
Glues, extra white	lb.	.20 @	.29
medium white	lb.	.19 @	.25
common bone	lb.	.14 @	.15
Graphite flake, bbls.	lb.	.06½ @	.10
Magnesia, carbonate	lb.	.07 @	.09
Mica, powdered	ton	90.00 @	100.00
Rotten Stone (powdered)	lb.	.02½ @	.04½
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.30 @	3.70
Talc, domestic	ton	16.00 @	18.00
Terra Alba	cwt.	1.15 @	1.75
Tripoli, white	lb.	.01¾ @	.02
Whiting, commercial	cwt.	.85 @	1.00
English cliffstone	cwt.	1.50 @	—
Quaker	ton	— @	—
Superfine	ton	10.00 @	12.00
Sussex	ton	— @	—
Vansulite	ton	12.50 @	—
Wood pulp XXX	ton	45.00 @	—
" " X	ton	25.00 @	—
Zinc Carbonate	lb.	.10 @	.12

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Granulated M.R.	ton	— @	—
Hydrocarbon, Hard	ton	— @	—
Hydrocarbon, Soft	ton	— @	—
320/340 M.P. hydrocarbon (c. l. factory)	ton	47.00 @	52.00
300/310 M.P. hydrocarbon (c. l. factory)	ton	42.00 @	47.00
Paradura	ton	62.50 @	65.00
Pioneer, MR, solid	ton	41.00 @	43.00
" —granulated	ton	51.00 @	53.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	34.00 @	80.00

SOFTENERS

Acids			
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulphuric, 60 degrees	ton	10.50 @	11.50
66 degrees	ton	15.00 @	16.00
Tartaric, crystals	lb.	.31½ @	—
Acids, Fatty			
Stearex	lb.	.10 @	.14
Stearic, single pressed	lb.	.10 @	.11
double pressed	lb.	.11½ @	.12
triple pressed	lb.	.13½ @	.14
Alkalies			
Caustic soda, 76%	cwt.	3.76 @	3.91
Soda ash, 58% C.L.	cwt.	1.42½ @	1.45
Oils			
Castor, No. 3 bbls	lb.	.13¾ @	.14
Cora, crude, bbls.	lb.	.09¾ @	.10
refined	lb.	.11 @	—
Cottonseed, crude		.08 @	—
Cycline	gal.	.27 @	.34
Dispersol A (light)	lb.	.15 @	.16
" B (dark)	lb.	.14 @	.15
Fluxrite	lb.	.05 @	.06
Glycerine, C.P. drums	lb.	.26 @	.26½
Linseed, Raw C.L. bbl.	lb.	.09½ @	.10
Palm Lagos	lb.	.08½ @	—
Niger	lb.	.07½ @	—
Vansulol	lb.	.10½ @	—
Peanut, domestic, crude	lb.	.11 @	—
Petrolatum, white	lb.	.08¾ @	.09
amber	lb.	.03¾ @	.04
dark amber	lb.	.03⅜ @	.03½
Pine, steam distilled	lb.	.70 @	—
Rapeseed, refined	gal.	.82 @	.83
Rosin, first rectified	gal.	.70 @	—
second rectified	gal.	.73 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.06½ @	.07½
coal tar	gal.	.05½ @	.06
pine	bbl.	9.00 @	10.00
Rosin, grade K	bbl.	11.40 @	—
Pigmentar	gal.	.33 @	.41
Tackol	lb.	.09 @	.15
Tar Retort	bbl.	15.50 @	16.00
kiln burned	bbl.	16.00 @	16.50
Solvents			
Acetone, pure	lb.	.14½ @	—
Alcohol denatured, No. 1 bbls.	gal.	.37½ @	.44½
Benzol, 90%	gal.	.28 @	—
pure		.29 @	—
Carbon bisulphide	lb.	.05½ @	.06¼
Carbon tetrachloride		.06¾ @	.07½
Motor gasoline, steel bbls.	gal.	.20 @	—
Naptha, V. M. & P.	gal.	.14 @	—
Turpentine, spirits	gal.	.78 @	.79
wood	gal.	.72 @	.73
Waxes			
Beeswax	lb.	.58 @	.60
Carnauba, No. 1	lb.	.57 @	.59
Ceresin, white	lb.	.13 @	.14
Montan, crude	lb.	.07 @	.07½
Ozokerite, black	lb.	.30 @	—
green	lb.	.30 @	.32
Miscellaneous			
RSL Mold Solution	gal.	.75 @	1.00

ANTI-OXIDANTS

Age-Rite	lb.	— @	—
Antox	lb.	.81 @	.83
VGB	lb.	.53 @	.66

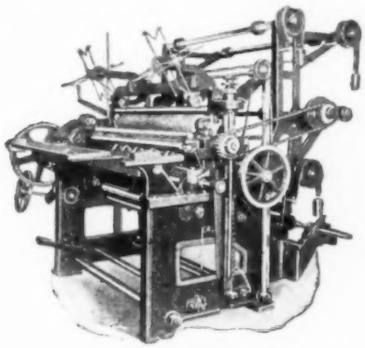
SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.10 @	.15

VULCANIZING INGREDIENTS

Sulphur Chloride (drums)	lb.	.03½ @	.06
Sulphur flour			
Superfine, bags	cwt.	2.20 @	2.80
" bbls.	cwt.	2.55 @	3.10
100% pure, refined, bags	cwt.	2.60 @	3.15
bbls.	cwt.	2.95 @	3.50
Vandex	lb.	— @	—

CAMACHINE 6-C



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Heater Presses
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THE WILLIAMS FOUNDRY & MACHINE CO.
"In Business Since 1888"
AKRON, OHIO

Est. 1900 Inc. 1919

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GENERAL MACHINE WORK

Akron, Ohio

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GUAYULE RUBBER

Washed and dry, ready for compounding. Invaluable in conjunction with Plantation Rubbers and Reclaims as an aid in Compounding. Especially useful in all Friction Stocks.

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ARGOSITE CLAY
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UNMATCHED PURITY

CONGAREE CLAY
EXCEEDING STANDARD
SPECIFICATIONS

UNITED CLAY MINES CORP'N. TRENTON, N. J.

A Section Devoted to Listings of Leading Producers and Distributors of Raw Materials, Machinery and Equipment, and Supplies for the Rubber Industry.

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Chemicals and Compounding Materials — Machinery and Equipment — Crude, Reclaimed and Scrap Rubber — Fabrics — Rubber Products — Consulting Engineers.

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LAMPBLACK
QUINOIDINE
R. W. Greeff & Co.
64 Water St., New York

ACCELERATORS
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Grasselerator 552
Grasselerator 808
Grasselli Chemical Co.
Rubber Service Dept.
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Manufacturers for forty years.
940 Old South Bldg., Boston, Mass.
612 Metropolitan Bldg., Akron, O.

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ACCELERATORS
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Chemicals and Compounding Materials — Machinery and Equipment—Crude, Reclaimed and Scrap Rubber—Fabrics—Rubber Products — Consulting Engineers.

Chemical and Compounding Materials [continued]

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BRILLIANT ORGANIC DYES; PERMANENT, NON-BLEEDING, LOW COST
For All Cures
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A neutral gum for rubber compounding.
Samples and prices on request.
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manufactured from *Genuine English Chalk* and *Cliffstone*—no adulterations.
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That's the MARKET PLACE!
It *shows* advertisers how to increase their business at the lowest possible cost. *Try it!*

THE MARKET PLACE Section Continued on Next Page

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Carrier Engineering Corporation
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Standard and Special
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Chemicals and Compounding Materials — Machinery and Equipment—Crude, Reclaimed and Scrap Rubber—Fabrics—Rubber Products — Consulting Engineers.

Machinery and Equipment [continued]

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Rubber Cloth Remnants
M. Norton & Co.
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Your Products Listed Here
reach buyers in rubber factories at a cost lower than is possible by any other method.
ARRANGE FOR YOUR LISTING TODAY!

USED MACHINERY
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Trenton, N. J. Akron, O.

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A complete Stock of New and Used Rubber Machinery on Hand for Immediate Shipment.
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Manufacturers of all classes of Rubber Goods.
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Do you BELIEVE in your products?
Then you should believe in telling the rubber industry all about them. The MARKET PLACE is the logical place to display your wares.

THE MARKET PLACE Section Continued on Next Page

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The Market Place

Chemicals and Compounding Materials — Machinery and Equipment—Crude, Reclaimed and Scrap Rubber—Fabrics—Rubber Products — Consulting Engineers.

Rubber— Crude, Scrap, Reclaimed

CRUDE RUBBER
We Solicit Your Inquiries
H. Muehlstein & Co., Inc.
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RECLAIMED RUBBER
We specialize in fine Grey, Black and Red Reclaimed Rubber.
Send us Your Inquiries
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Well Known Standards
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AKRON OFFICE: 507 Second Nat'l. B'ldg.

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Pequanoc Rubber Co.
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RECLAIMED RUBBER
A standardized grade for every requirement.
U. S. Rubber Reclaiming Co., Inc.
100 E. 42nd St., New York, N. Y.
"44 Years Serving the Industry Solely as Reclaimers"

GUAYULE—"Duro" Brand washed and dried ready for compounding.
Continental Rubber Co.
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RECLAIMED RUBBER
of Standardized Quality.
NO. 188 FOR TUBES
Philadelphia Rubber Works Co.
New York Akron Philadelphia

RECLAIMED RUBBER
The Xylos Rubber Co.
Akron, Ohio
CAPACITY 250,000 POUNDS DAILY

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Always Buying and Selling
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RECLAIMED RUBBER—
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RUBBER—Crude and scrap, all grades.
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Rubber Technologist
R. R. Olin Laboratories
P.O. BOX 72, AKRON, OHIO
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New England Southern Mills
LAWRENCE & CO.
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The Most Economical Form of Advertising

The Market Place Section of THE RUBBER AGE contains the *only* alphabetically arranged listings of small 'ads' available in the rubber industry. Your advertisement in this section will not only be easy to find, but it will produce excellent results at very moderate costs. Let us send you details.

STATISTICAL SECTION

TIRES & TUBES
CRUDE RUBBER

AUTOMOBILES
GASOLINE

GASOLINE consumption for the month of April amounted to 23,371,000 barrels, the largest amount consumed in any one month since October of last year when consumption totaled 23,973,000 barrels.

Although imports of crude rubber into the United States had been variously estimated to total around 48,000 tons, official import figures from the Department of Commerce show gross imports for April to be 46,202 tons at a declared value of $37,284,806. Re-exports totaled 1,575 long tons at a total declared value of $1,428,425. This represents a decline from the previous month.

May imports of crude rubber have not yet been officially determined, but shipments from the East, according to cable advices, totaled 31,993 tons. With shipments still to be accounted for from outports, it is generally estimated that May imports will total about 36,000 tons.

Stocks of crude rubber in London during the four weeks of May have shown a decline with the exception of the last week when there was a slight rise from the previous week, totaling 386 tons.

The May average for spot closing prices of ribbed smoked sheets was 40 3/4c. London average for the same period was 19.750d.

Automobile production, both in the United States and Canada, during April, has increased over the other three months of the current year. Truck production, however, in the United States shows a decline from March.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available. The section accordingly affords the most up-to-date, complete and convenient statistical service in the industry.

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United States Rubber Imports and Exports
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Stocks of Crude Rubber in the U. S.
Stocks of Crude Rubber in London
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Automobile Production—U. S. and Canada
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Rubber Exports from Producing Countries
Rubber Imports into Consuming Countries

U. S. Imports and Exports of Crude Rubber.

	Gross Imports			Re-exports			Net Imports
YEARS	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1925:							
Jan.	32,898	22,406,756	30.41	1,162	963,593	37.02	31,736
Feb.	24,696	18,532,115	33.50	979	779,406	35.53	23,717
Mar.	33,072	25,146,691	33.94	1,345	1,105,119	36.69	31,727
Apr.	32,506	24,874,562	34.16	1,130	1,009,305	39.86	31,376
May	36,932	30,311,754	36.64	1,203	1,323,445	49.12	35,729
June	31,569	26,855,883	37.98	1,198	1,577,106	58.75	30,371
July	32,455	33,701,723	46.36	1,278	2,132,681	74.52	31,177
Aug.	33,412	39,834,348	53.22	1,132	1,623,258	64.08	32,281
Sept.	26,367	36,686,013	62.11	1,154	1,820,360	70.41	25,213
Oct.	34,651	50,027,338	64.45	1,132	1,989,291	78.43	33,519
Nov.	37,755	56,271,963	66.54	1,605	2,898,930	80.65	36,150
Dec.	40,329	65,055,868	72.02	1,510	2,625,259	77.61	38,819
	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926:							
Jan.	42,404	72,528,151	76.36	2,084	3,747,505	80.28	40,320
Feb.	32,865	58,733,370	79.78	1,430	2,280,168	71.17	31,435
Mar.	42,152	70,589,581	74.76	1,836	2,735,234	66.51	40,316
Apr.	34,544	48,742,539	62 99	1,128	1,605,093	63.58	33,416
May	29,756	36,896,080	55 35	1,052	1,558,987	66.17	28,704
June	24,900	34,498,561	61.85	1,105	1,371,217	55.41	23,795
July	35,820	33,061,470	41.20	1,554	1,743,854	50.09	34,266
Aug.	27,400	24,670,752	40.21	1,318	1,339,563	45.38	26,082
Sept.	37,112	32,625,082	39.02	1,437	1,519,870	47.20	35,675
Oct.	29,333	25,300,483	38.50	1,366	1,816,270	43.02	27,967
Nov.	38,925	34,661,631	39.97	1,482	1,320,461	42.00	37,443
Dec.	37,754	33,261,366	39.33	1,904	1,841,305	43.16	35,850
	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927:							
Jan.	43,340	36,753,719	37.99	1,526	1,444,784	42.22	41,814
Feb	28,338	23,110,257	36.41	2,451	2,277,297	41.47	25,887
Mar.	35,514	28,693,026	36.07	2,763	3,249,665	52 50	32,751
Apr.	46,202	37,284,806	36.15	1,575	1,428,425	40.45	44,627

U. S. Consumption of Crude Rubber

(Rubber Association of America statistics raised to 100 per cent—All figures in long tons)

	Figures on Monthly Basis						
	1921	1922	1923	1924	1925	1926	1927
January	5,045	16,938	30,106	29,058	29,638	32,196	31,518
February	5,955	14,767	30,149	25,736	29,761	31,136	30,187
March	9,190	21,408	36,629	28,385	33,498	32,936	36,141
April	13,084	19,294	29,085	27,129	34,139	32,696	35,871
May	16,023	23,246	36,155	25,845	35,322	29,364	
June	16,142	31,713	24,272	22,753	35,822	28,598	
July	18,310	24,522	17,685	23,396	36,053	27,577	
August	23,649	29,361	20,359	28,982	35,909	34,533	
September	16,705	24,410	17,594	31,497	31,691	32,904	
October	16,814	26,881	21,321	31,520	29,047	29,836	
November	14,105	24,950	20,437	27,289	28,853	28,080	
December	15,482	25,070	21,902	27,199	28,748	26,293	
TOTALS	170,504	282,560	305,694	328,769	388,481	366,149	

	Figures on Quarterly Basis					
Quarter	1921	1922	1923	1924	1925	1926
Jan./Mar.	65,463	127,360	96,776	87,609	95,263	94,301
Apr./Jun.			89,493	75,674	104,099	87,109
Jul./Sept.	105,962	155,067	55,621	83 813	99,493	93,793
Oct./Dec.			63,617	92,656	85,789	83,212
Total	171,425	282,427	305,507	339,752	384,644	358,415

Note: The Rubber Association estimates its monthly rubber consumption figures to be 90% complete. Up until 1925 the quarterly figures were likewise estimated to be 90% complete; beginning with 1925 an estimate of 92% completeness has been used. These estimates have been used in raising the figures in this table to 100%. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
Mar. 26	5,800	1,014	1,638	493	8,945
Apr. 2	4,936	582	1,568	542	7,628
Apr. 9	5,536	584	805	1,295	8,220
Apr. 16	3,875	1,037	1,513	624	7,049
Apr. 23	5,548	1,090	1,241	475	7,462
Apr. 30	5,250	1,033	1,336	324	7,943
May 7	5,764	431	1,778	464	8,437
May 14	4,749	570	1,054	1,327	7,700
May 21	4,853	505	2,125	897	8,380
May 28	4,687	546	1,540	777	7,550

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
1925																																
Jan.	—	39⅞	39⅝	—	39	39	39¼	38½	38⅝	38⅝	38½	37⅞	36½	36⅝	35	35⅞	35¼	34⅞	34⅞	36¼	35	35⅛	36¾	36½	35⅝	35¼	35¼	35⅝	—	35⅝	35⅝	36⅝
Feb.	—	35⅝	34⅝	34½	34½	34½	35⅜	—	—	34⅝	35⅛	36	35⅞	36	35	36⅞	36⅜	35⅝	36¼	36⅝	36⅜	—	—	37⅜	37½	37⅞	38⅛	—	—	—	—	36
Mar.	—	36⅜	35⅞	36⅛	36⅞	39⅛	39⅜	—	39⅝	40⅝	40	39	40⅝	40⅛	40	40⅝	40½	41⅛	41¼	41⅝	41⅞	42⅛	42½	43⅛	43⅛	43⅞	43⅞	43⅞	43⅞	—	43⅝	41
Apr.	41¼	41¼	41¼	41⅛	—	42⅛	42⅛	43⅛	43⅝	—	44	—	44⅛	44⅜	44⅜	44⅛	44	44⅛	43⅞	43⅞	44⅛	43¾	43¾	43⅞	44⅛	44⅛	44⅛	45⅛	45⅜	44⅞	—	44
May	45	45⅝	—	47¼	46⅞	46⅜	46⅜	50⅛	52½	53⅝	55⅛	57	59¼	60¾	60	64¼	64⅛	69⅜	69⅜	69⅜	69⅜	69⅜	65	65	63¾	65⅝	69⅜	69⅜	69⅜	69⅜	—	58½
June	60½	72	74⅞	76½	75¾	75⅜	88⅜	95⅜	95⅜	74	73⅝	76⅛	74⅜	73⅝	—	71⅛	71⅝	72⅝	73⅜	75½	76¼	79¼	83½	85⅜	82⅝	87	89⅞	85⅝	85⅝	85⅝	—	77¼
July	81⅜	85⅜	—	—	—	86⅜	86⅜	94⅜	94⅜	99⅜	106⅜	110	105⅜	110⅜	117	116⅜	116⅜	118⅜	80⅛	83½	82⅛	121	117⅛	119	117⅝	112¼	107⅜	96⅜	93¾	89¾	93¾	103⅜
Aug.	94½	95⅜	86⅜	85⅜	85⅜	86⅜	81⅜	79	71⅜	72⅛	76⅛	81½	80⅜	77⅜	—	93⅜	92⅜	80⅛	83½	82⅛	92	82½	82½	93½	82	85¼	85¼	89⅜	87¼	91½	90	83
Sept.	88⅜	87¼	85	81¼	81¼	—	—	78⅛	80½	83	86⅛	92	92½	97⅜	95½	97	99	92⅜	94¼	—	92	93¼	93¼	90	89	—	89⅜	91¼	91½	—	88⅞
Oct.	91⅛	—	92	—	94½	—	97½	99	99½	101	—	100⅛	101⅜	104⅞	105½	—	107	107	109⅜	110⅜	110½	109	110½	99¼	99¼	98	99½	99¾	101½	100¼	98
Nov.	106⅜	108⅞	—	98⅜	98¼	100	100½	—	98⅜	99½	101⅜	103	105½	—	101	99¼	90¼	93	107	109	88¼	—	110⅜	109	106¼	—	108¼	108¾	107	104¾
Dec.	107⅜	106½	107⅜	107¼	108¼	—	108	109	109¼	106	105¼	105⅝	—	101	—	99¼	90¼	93	88¼	86⅜	—	88¼	88⅜	88⅜	—	—	91	93	91¼	91¼	98½
1926																																
Jan.	—	—	—	67	67	87¼	85½	86½	87¼	87¾	—	86⅜	88¾	88¼	85⅜	84½	82½	—	75½	75⅛	75	72	72⅜	—	68	66½	67	69¼	70⅜	69	—	79½
Feb.	67	67⅛	66¼	66⅜	66	69	69	69	67	65	66	66	65⅝	—	—	—	63	61	59	61	—	—	56	55	52	51¼	51	—	—	58⅜	58	62¼
Mar.	55	58	53	53⅜	53⅛	57½	56	56	55½	61	60	63	61⅝	62	62	61	62	61	61½	61½	60	61	61	60	60	59½	60	59	59	58½	48½	59
Apr.	59	—	59	—	59	58	56⅝	56⅛	53	53	49	49	51⅞	50⅞	49¼	47½	48⅛	47	47	48½	48½	49	48	48	48	48	48	48	48	49	—	61¼
May	48¼	50	50¾	49⅛	49⅛	49¾	49¾	49⅛	—	49	49⅛	49	48⅞	47⅝	47½	48	47	47	47½	47½	46⅝	44	43½	46	45	45	43	—	—	—	—	47¼
June	41¼	42	42	41⅛	42	41⅛	41⅝	42	43	41⅜	42	—	43	43	43	43	43	43	43	43	43	44	43½	41½	42	42	41½	42	42	—	42	42½
July	42	42	—	42	—	—	41½	41½	41⅛	41⅜	41⅜	—	41⅜	41⅜	41	41⅜	41⅜	41⅜	41½	41½	41	41½	41½	41½	41	41½	41	41	41	41	39	41½
Aug.	—	38⅜	38½	38⅛	37	38¼	39	40¼	38¼	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	38¼	39¼	39	39	39	39	39	39½	39⅝	40	38½
Sept.	40¼	40¾	40¾	—	—	—	—	—	—	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40½	40½	40½	40½	40½	40¼	42¼	42	42	—	42¾	42½	42½	42½	42	41
Oct.	43	43	—	43¾	42¾	42¾	42¾	42¼	42¼	42¼	42¼	42¼	42¼	42¼	42¼	42¼	42¼	42¼	42¼	42¾	42¾	42¼	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½
Nov.	41¼	—	41	41¼	41½	41½	41½	41½	41½	41½	41½	42¾	41¼	41¼	41¼	41¼	41¼	41¼	40½	40⅝	41¼	41¼	41¼	42⅜	42⅜	42⅜	42⅜	42⅜	42⅜	42⅜	37	38½
Dec.	36¾	37¼	37½	37½	—	37	37	37	37	37	37	37	37	37	37	37	37	37	38	38	38	38	38	38	38	38	38	38	38	38	38½	38¼
1927																																
Jan.	—	36½	36½	36½	36½	39¼	39¼	39¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	39¾	39¾	39¾	38¾	38¾	38¾	38¾	38¾	38¾	38¾	38¾	38¾	38¾	38¾
Feb.	37¾	37¾	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	38⅜	38⅜	38⅜	38⅜	38⅜	38⅜	38⅜	38⅜	38⅜	38⅜	38⅜	38⅜	38⅜	38⅜
Mar.	39¾	40	40¾	40¾	41	41	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼
Apr.	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜	41⅜
May	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜	40⅜
June																																
July																																
Aug.																																
Sept.																																
Oct.																																
Nov.																																
Dec.																																

Average Spot Closing Prices--Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	*Cents*	*Year*	*Cents*	*Years*	*Cents*
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound since 1922

Months	1922 *Cents*	1923 *Cents*	1924 *Cents*	1925 *Cents*	1926 *Cents*	1927 *Cents*
Jan.	18.82	32.73	25.86	36.71	79.50	38.75
Feb.	16.12	35.14	25.29	36.01	62.25	38.25
Mar.	14.53	34.21	22.83	41.00	59.00	41.04
Apr.	15.99	32.48	22.51	43.64	51.25	40.86
May	15.25	27.39	18.89	58.47	47.75	40.76
June	15.11	26.88	18.81	77.26	42.50	
July	14.67	26.10	22.16	103.16	41.03	
Aug.	13.93	28.84	26.17	82.99	38.50	
Sept.	14.44	28.95	27.56	88.88	41.00	
Oct.	19.78	26.93	31.13	98.01	42.50	
Nov.	23.68	27.14	34.33	104.80	38.50	
Dec.	27.42	26.60	37.88	98.51	38.25	
Average for Year	17.50	29.45	26.20	72.46	48.50	

London Closing Prices of Ribbed Smoked Sheet

(In pence per pound)

Fifth Restriction Year—Third Quarter

Day	*May*	*June*	*July*	*Day*	*May*	*June*	*July*
1	—	19¾		16	19¾		
2	19⅝	19½		17	19¾		
3	19¾	19⅝		18	19¾		
4	19¾			19	19¾		
5	19⅞			20	19¾		
6	19⅞			21	19¾		
7	19⅞			22	—		
8	—			23	19¾		
9	19⅞			24	19⅞		
10	19⅞			25	19⅞		
11	19¾			26	19⅞		
12	19¾			27	19¾		
13	19¾			28	19¾		
14	19¾			29	—		
15	—			30	19¾		
				31	19¾		

(The average price for the period for which daily prices are reported above is approximately 19.750 pence. The British Colonial Secretary has announced that only 60% of the standard production will be exportable from the restricted area during the next quarter if the price during the entire current quarter does not average at least 21 pence.)

Average Price in Previous Quarters

Quarter	1922-23	1923-24	1924-25	1925-26	1926-27
Nov.-Jan.	14.285	14.175	17.9983	46.709	19.265
Feb.-Apr.	16.858	12.917	19.356	28.103	19.696
May-June	14.242	10.974	38.469	21.001	
Aug.-Oct.	14.944	14.632	43.269	20.199	

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	*May Cents*	*June Cents*	*Day of Month*	*May Cents*	*June Cents*	*Day of Month*	*May Cents*	*June Cents*
1	——	16.95	11	15.60		21	16.30	
2	15.45	17.00	12	15.75		22	——	
3	15.85	16.85	13	15.75		23	16.60	
4	15.95		14	15.75		24	16.55	
5	15.80		15	——		25	16.50	
6	16.00		16	15.70		26	16.50	
7	15.95		17	15.70		27	16.75	
8	——		18	15.80		28	16.75	
9	15.75		19	16.20		29	——	
10	15.75		20	16.20		30	——	
						31	17.05	

Average Monthly Price Per Pound

Month	1925 *Cents*	1926 *Cents*	1927 *Cents*	*Month*	1925 *Cents*	1926 *Cents*	1927 *Cents*
Jan.	23.99	20.85	13.42	Aug.	23.72	18.57	
Feb.	24.70	20.60	14.10	Sept.	23.79	17.02	
Mar.	25.64	19.35	14.32	Oct.	21.77	13.14	
Apr.	24.54	19.13	14.75	Nov.	20.94	12.86	
May	23.41	18.92	16.07	Dec.	20.06	12.68	
June	24.13	18.57		Average for Year	23.45	17.53	
July	24.68	18.71					

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At	ON HAND			AFLOAT			AND AFLOAT ON HAND		
End of	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	60,870	55,198	76,172	36,759	46,296	45,312	97,629	100,434	121,484
Feb.	54,109	58,035	91,186	41,475	46,935	42,166	95,584	104,970	133,352
Mar.	52,494	61,822	85,740	40,577	43,567	49,600	93,071	105,389	135,340
Apr.	50,143	55,261	92,757	53,465	41,905	38,963	103,608	97,166	131,720
May	52,064	64,360		46,846	40,303		98,910	104,663	
June	50,997	60,460		51,202	40,907		102,199	101,367	
July	46,245	64,900		46,003	38,062		92,248	102,962	
Aug.	42,354	60,870		41,254	37,360		83,608	98,230	
Sept.	36,367	62,078		55,151	42,464		91,518	105,542	
Oct.	34,085	64,989		51,098	52,930		85,183	117,919	
Nov.	34,885	69,385		42,692	47,311		86,577	116,696	
Dec.	51,215	72,520		48,208	52,020		99,423	124,540	

(Rubber Association of America figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At End of:	1920	1921	1922	1923	1924	1925	1926
January	19,300	56,573	67,252	73,498	57,460	27,172	9,994
February	18,329	59,439	67,623	70,483	56,732	23,425	10,004
March	18,969	63,913	66,670	63,438	55,647	18,104	13,750
April	20,072	68,759	68,637	58,770	54,559	12,949	18,951
May	20,921	70,403	70,146	54,439	51,615	5,895	20,896
June	22,517	69,408	71,597	51,050	51,115	5,318	23,894
July	25,346	71,065	71,515	49,937	52,073	4,258	27,727
August	30,674	73,211	72,112	48,427	49,700	4,619	30,764
September	35,504	72,175	70,977	54,523	44,011	5,453	35,077
October	41,743	69,229	68,536	58,891	37,523	5,086	42,141
November	45,550	70,786	68,548	60,074	33,593	3,869	44,057
December	50,652	69,792	72,299	60,246	29,488	5,697	48,921

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1926					
September	30,764	32,011	33,249	34,587	—
October	36,065	37,226	39,650	41,080	42,141
November	43,045	43,299	44,553	43,859	—
December	44,395	46,349	47,324	48,382	—
1927					
January	48,948	50,756	52,484	53,662	54,786
February	55,740	56,939	56,962	58,659	—
March	59,945	61,516	61,300	63,167	—
April	62,634	63,861	65,033	65,511	67,034
May	68,187	68,041	66,668	67,054	

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1925	1926	1927	*End of*	1925	1926	1927
Jan.	15,925	15,726	25,440	July	15,894	23,101	
Feb.	17,320	13,653	26,766	Aug.	17,251	23,362	
Mar.	17,261	18,389	27,844	Sept.	16,526	25,997	
Apr.	15,368	16,328	24,543	Oct.	15,346	26,614	
May	15,804	16,967		Nov.	19,788	25,486	
June	15,884	19,416		Dec.	18,840	26,443	

Rims Inspected and Passed in U. S.

(Tire & Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1925	25,997,849	66.8
1924	21,863,720	19.7	1926	24,199,613	78.8
1926			1927		
July	2,123,368	84.8	January	1,489,078	77.0
August	2,378,850	82.3	February	1,753,224	84.4
September	2,365,518	80.7	March	2,071,989	85.1
October	1,828,539	76.9	April	2,060,868	88.0
November	1,210,472	77.0	May		
December	1,096,429	76.7	June		

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1924	1925	1926	1927
January	11,918,000	14,386,000	17,582,000	17,888,000
February	9,626,000	13,210,000	15,814,000	18,240,000
March	10,961,000	14,890,000	19,302,000	22,464,000
April	14,583,000	19,013,000	20,848,000	23,371,000
May	15,889,000	20,459,000	24,213,000	
June	16,421,000	20,724,000	23,803,000	
July	18,610,000	22,879,000	24,752,000	
August	19,825,000	22,323,000	26,912,000	
September	16,871,000	20,177,000	22,929,000	
October	18,029,000	19,826,000	23,973,000	
November	16,607,000	18,024,000	20,618,000	
December	15,663,000	17,954,000	21,419,000	
TOTAL	185,003,000	223,865,000	262,165,000	

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926
Production	40,932	45,259	51,633	60,845	61,237
Shipments	39,987	45,204	50,120	59,262	59,002
Inventory[2]	6,132	5,772	7,427	8,142	10,456

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	4,740	4,587	4,965	4,013	2,974	4,932	7,949	9,947	10,432
Feb.	4,908	4,865	5,095	3,924	3,436	4,458	8,928	11,164	11,070
Mar.	5,276	5,456	6,276	4,657	4,561	5,701	9,510	12,004	11,583
Apr.	5,341	5,346		5,498	4,980		9,088	12,461	
May	5,467	5,023		5,954	5,211		8,611	12,343	
June	5,418	5,422		6,737	5,724		7,243	11,968	
July	5,587	4,950		6,298	6,337		6,421	10,592	
Aug.	5,607	5,872		4,760	6,744		7,261	9,732	
Sept.	5,007	5,706		4,569	6,040		7,681	9,318	
Oct.	4,505	5,103		5,580	4,544		6,670	9,917	
Nov.	4,229	4,324		3,671	3,733		6,955	10,297	
Dec.	4,760	4,683		3,601	4,718		8,142	10,456	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926
Production	50,850	60,116	70,706	82,614	76,618
Shipments	49,673	59,072	68,016	81,004	71,591
Inventory[2]	7,643	8,425	11,052	11,313	16,200

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	6,343	6,809	5,337	5,576	3,723	6,016	11,570	14,361	15,585
Feb.	6,339	6,825	5,658	4,971	3,736	5,120	13,023	17,090	16,075
Mar.	7,000	7,030	7,184	5,711	4,987	6,157	14,236	19,131	17,096
Apr.	6,851	6,554		6,704	5,051		13,618	20,674	
May	6,846	6,149		8,040	6,304		12,501	21,141	
June	6,942	6,171		9,032	6,898		10,409	20,243	
July	7,544	5,729		9,140	8,569		8,635	17,267	
Aug.	7,618	7,424		6,923	9,579		9,271	15,462	
Sept.	7,254	7,590		6,665	7,762		9,950	15,312	
Oct.	6,612	6,208		7,845	5,474		8,726	15,929	
Nov.	6,266	4,852		5,406	4,045		9,491	16,604	
Dec.	6,999	5,277		4,991	5,463		11,313	16,200	

(1) Rubber Association of America figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	Passenger Cars			Trucks		
	Total	United States	Canada	Total	United States	Canada
1920	1,883,158	1,799,522	83,636	322,039	311,531	10,508
1921	1,514,000	1,452,902	61,098	147,550	142,402	5,148
1922	2,397,827	2,302,923	94,904	251,434	244,285	7,149
1923	3,719,164	3,589,936	129,228	378,288	361,078	17,210
1924	3,262,764	3,144,999	117,765	378,106	360,625	17,481
1925	3,817,639	3,678,328	139,311	498,019	475,941	22,078
1926						
January	284,703	272,922	11,781	33,461	29,763	3,698
February	334,524	319,763	14,761	41,685	37,608	4,077
March	399,105	381,116	17,989	49,233	44,848	4,385
April	401,836	383,907	17,929	53,887	50,314	3,573
May	394,569	373,140	21,429	51,343	47,838	3,505
June	358,360	339,542	18,818	47,043	44,110	2,933
July	328,816	315,863	12,953	41,847	39,592	2,255
August	393,040	380,258	12,782	47,907	45,404	2,503
September	363,537	350,913	12,624	51,299	46,428	4,871
October	300,142	289,547	10,595	46,965	42,890	4,075
November	226,278	219,504	6,774	39,410	36,356	3,054
December	143,413	137,361	6,052	30,002	28,302	1,700
TOTAL	3,928,323	3,766,336	161,487	534,082	493,453	40,629
1927						
January	208,718	196,973	11,745	40,874	37,243	3,631
February	275,458	260,632	14,826	41,947	38,118	3,829
March	360,754	341,665	19,089	48,590	45,056	3,534
April	373,961	353,071	20,890	48,216	44,495	3,721
May						
June						
July						
August						
September						
October						
November						
December						

Exports of Crude Rubber from Principal Producing Countries

(Figures in Long Tons)

	BRITISH MALAYA[1]								DUTCH EAST INDIES[2]							
	Gross Exports	*Gross Exports minus*			*India & Burma[3]*	*Sarawak[4]*	*British North Borneo[4]*	*Siam[4]*	*Java & Madura*	*Sumatra E. Coast*	*Other D.E.I.*	*Fr. Indo-China[4]*	*Amazon Valley[5]*	*All Other[4]*	*World Total[7]*
	Exports	*Imports*	*Imports*	*Ceylon[3]*											
1923	252,016	70,432	181,584	37,112	6,416	5,705	4,237	1,718	32,938	48,402	43,422	5,606	19,127	7,856	404,123
1924	259,706	108,524	151,183	37,351	7,697	6,699	4,631	2,962	42,446	53,483	80,347	6,688	22,906	9,065	425,447
1925	316,825	158,022	158,803	45,684	10,082	8,413	5,424	5,394	46,643	62,678	119,271	7,881	24,079	13,797	508,119
1926:															
Jan.	30,452	10,237	20,215	4,058	1,273	416	472	289	4,397	6,277	8,081	915	1,697	1,805	49,895
Feb.	30,440	8,306	22,134	4,941	725	488	450	253	4,474	5,734	6,801	554	2,169	1,978	50,701
Mar.	35,012	14,800	20,212	5,708	1,113	792	561	418	4,865	5,612	11,880	573	2,395	1,899	58,028
Apr.	23,727	10,565	13,162	3,484	590	679	374	293	4,522	4,598	6,208	410	1,778	1,529	37,627
May	31,231	10,604	20,627	3,600	691	927	410	279	4,742	5,293	8,606	502	2,144	1,464	49,285
June	30,624	11,764	18,860	3,906	452	779	512	275	5,440	6,111	9,844	549	1,367	1,279	49,374
July	28,824	15,280	13,544	4,800	938	911	420*	439	4,929	5,522	12,864	1,521	1,246	1,148	48,282*
Aug.	34,625	13,595	21,030	5,246	521	890	420*	316	4,418	3,472	10,349	378	1,411	1,997	49,548*
Sept.	35,913	13,972	21,941	6,027	652	888	420*	457	4,326	6,757	10,971	681	1,463	822	55,405*
Oct.	39,367	15,203	24,164	6,026	635	805	420*	385	4,193	6,988	11,513	661	1,616	1,023	58,429*
Nov.	34,302	12,201	22,101	4,687	1,111	685	420*	285	4,060	5,746	8,998	718	1,780	1,259	51,850*
Dec.	36,811	14,716	22,095	6,361	1,177	895	420*	338	5,025	7,106	12,333	790	2,492	714	59,746*
	391,328	151,243	240,085	58,844	9,878	9,155	5,299*	4,027	55,391	69,216	118,448	8,252	21,538	16,017	616,170*
1927:															
Jan.	34,946	14,995	19,951	6,697	921	959	500*	304	4,184	6,705	10,541	941	3,096	981	55,780*
Feb.	27,528	11,607	15,921	3,571	1,123	522	500*	360	4,707	6,526	10,634	675	1,800*	1,350*	47,669*
Mar.	41,246	17,464	23,882	7,141	1,469	997	500*	432	5,657	7,003	12,490	733	1,800*	1,350*	63,454*
Apr.	29,041	13,069	15,972									557			
May															
June															
July															
Aug.															
Sept															
Oct.															
Nov.															
Dec.															

(1) Malayan net exports cannot be taken as production since imported rubber is largely wet native rubber which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, and 3,263 in 1926. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, and about 20 tons in 1926. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, and about 60 tons in 1926. In 1926, 196 tons of latex sprayed rubber and 125 tons of ficus rubber were exported from Java and Madura. (6) Calculated from official import statistics of principal consuming countries; viz., United States, United Kingdom, France, Germany, Italy, Belgium, and Netherlands. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States	*United Kingdom*	*France* (abd)	*Germany*	*Canada* (ac)	*Japan* (ac)	*Italy*	*Russia* (ce)	*Australia* (cf)	*Belgium* (d)	*Netherlands*	*Sweden* (abcd)	*Norway* (abc)	*Denmark* (abd)
1919	236,977	42,671	19,951	5,584	8,770	10,688	9,894	75	733	3,995	2,771	2,022	437	673
1920	248,762	56,844	15,868	11,890	11,912	6,015	6,123	62	1,040	3,840	5,510	1,567	241	479
1921	179,678	42,087	16,981	21,920	8,248	22,981	3,906	165	554	1,705	1,022	813	178	251
1922	296,267	11,724	27,644	27,546	9,366	16,449	6,430	2,453	2,649	172	-3,807	1,248	321	87
1923	300,372	12,700	31,067	18,519	13,299	17,181	8,489	4,506	1,631	2,184	792	1,391	448	354
1924	317,747	-11,550	34,488	22,727	14,420	19,612	8,764	824	3,127	2,688	-807	1,781	669	473
1925	**381,815**	**4,061**	**36,911**	**33,937**	**19,825**	**12,743**	11,412	7,088	4,217	2,930	875	1,690	701	440
1926	395,667	84,865	39,390	22,775	20,253	18,125	9,809	6,529	7,860	2,498	2,665	2,125	609	575
1926:														
January	40,345	6,886	3,170	703	2,188	892	760	332	358	76	154	123	46	51
February	31,435	5,114	3,513	1,113	1,881	741	1,041	643	432	143	89	171	82	94
March	40,316	8,907	4,790	1,342	2,079	864	1,037	832	469	129	227	213	91	55
Apr.	33,416	8,275	4,834	1,781	1,624	1,868	865	402	431	71	93	204	27	23
May	28,705	6,773	2,937	1,848	1,239	1,010	705	200	386	186	241	110	24	47
June	23,795	5,894	2,327	1,655	1,188	1,465	1,070	983	546	269	214	178	20	34
July	34,266	6,768	2,603	2,202	1,552	1,447	800	132	586	295	480	195	34	27
Aug.	26,081	7,327	2,819	2,110	1,888	1,284	796	655	1,159	303	596	199	52	55
Sept.	35,675	8,843	2,900	2,029	1,355	1,922	819	472	1,125	283	430	159	43	27
Oct.	28,110	8,082	2,962	2,423	1,865	2,396	645	585	889	301	2	210	69	43
Nov.	37,673	9,247	3,194	3,007	1,548	3,380	832	568	802	194	-18	179	65	50
Dec.	35,850	4,749	3,341	2,562	1,846	856	439	725	677	248	157	184	122	69
1927:														
January	41,815	10,192	3,732	2,481	1,936		672	803	508	296	193	164	53	52
February	25,886	7,692	3,708	3,103	2,620		601	907		502	153	191		27
March	32,752	9,049	2,328		3,760			784			86	219		

a—Including gutta percha. b—Including balata. c—Reexports not deducted. d—Believed to include scrap and reclaimed rubber. e—Russian statistics are exports from United Kingdom only to Russia. f—Australian annual statistics including 1924 are exports to Australia from Malaya, Ceylon, Dutch East Indies and United Kingdom; monthly figures and total for 1925 are exports from Malaya, Ceylon, and Java only. -Minus sign, reexports in excess of imports. *All statistics from original official trade returns.*

REVIEW DESK

RUBBER BLUE BOOK. A directory of the Rubber and Tire Industries of the United States and Canada. Published by the Atlas Publishing Co., New York. 600 pages. Price $10.00.

The first edition of a new directory of the rubber industry should be worthy of close inspection since the industry has not been offered such a compilation since 1916, and in that interval has grown to a size where a complete, authentic reference book is deserved and needed. The publishers who have undertaken the task are said to have compiled directories in several other industries and an especially helpful volume has accordingly been expected by those who have watched for the appearance of the book. It is only fair to say, however, that they are likely to be disappointed in many ways in the volume which has been delivered.

Since a directory of a leading industry cannot be compiled and published in a week, some excuse must always be made for obsolete data contained in a new edition. Likewise, a number of errors are excusable when thousands of facts are being tabulated. But the Rubber Blue Book, it seems to this reviewer, contains a larger quota of inaccuracies than even a charitably-inclined user will overlook with complacency. These include such mistakes as the listing of companies long defunct, the promiscuous mixing of jobbers' names in lists that purport to be devoted to manufacturers only, and inaccurate assignment of products to particular companies. In view of the present date it is almost startling to find, for instance, that the roster of the Rubber Association which appears in the book is that of 1926 instead of the present year.

The volume does not lack in completeness in its plan which makes it all the more regrettable that it was carelessly carried out. The two chief sections of the work are a general descriptive list of American and Canadian manufacturers and a classification of both large and small rubber products according to manufacturers producing them. Other sections list automobile manufacturers, brands and trade names, suppliers of materials and equipment for rubber factories, purchasing agents, rubber chemists, associations, rubber goods jobbers and distributors, tire dealers and distributors, crude and scrap rubber dealers, reclaimed rubber manufacturers, and a membership list of the Rubber Exchange of New York.

One suspects that errors which mar the presentation of these various sections are due largely to unfamiliarity with the rubber field. This is nowhere so well illustrated as in the unwise effort to tabulate under each rubber manufacturer the raw materials which he uses.

It is understood that plans will be formulated at an early date for the 1928 edition of the work which will afford an opportunity for correcting many of the faults which unfortunately mark the present offering.

* * * *

GOTTLOB'S TECHNOLOGY OF RUBBER. Authorized English Edition Translated and Revised from the German Edition of 1925. By Joseph L. Rosenbaum, Maclaren & Sons, Ltd., London. 1927. 350 Pages.

This book on the technology of rubber is prepared in two sections, with an introduction on the chemistry of pure natural rubber hydrocarbon. The first section under the title of "The General Technology of Rubber," contains a discussion of raw rubber and the processes of its preparation, such as washing, drying, aging, vulcanizing, accelerators, etc. The second section, under a general head of "Special Technology of Rubber Goods," is concerned with the manufacturing of mechanicals without textiles. Heels, soles, toys, shoes and tires are considered. The book is profusely illustrated and carefully indexed. It should serve as a valuable handbook to those interested in rubber manufacturing.

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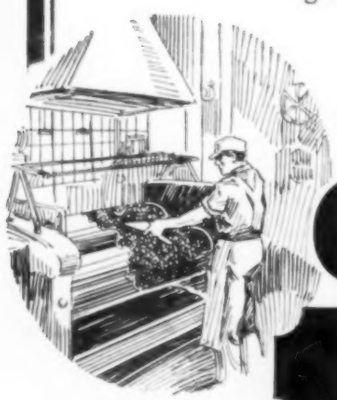

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